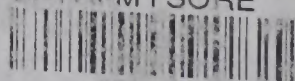


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FRANCES STERN
1873-1947

STERN'S APPLIED DIETETICS

The Planning and Teaching of Normal
and Therapeutic Diets

REVISED BY

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THIRD EDITION



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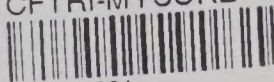
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Dedicated to

The Board of Managers of The Boston Dispensary
whose constant faith and encouragement throughout the years have contributed immeasurably to the fulfillment of the ideals and philosophy upon which the Frances Stern Food Clinic was founded.

PREFACE TO THIRD EDITION

Frances Stern had been planning for the revision of this book prior to her death on December 23, 1947. It was therefore logical for those who had been associated with her for many years to complete this revision as a living tribute to one whose lifelong work fulfilled a definite need in the field of nutrition. In her work, as in all aspects of her life, she was a keen critic—unflagging in her quest for improvement—so that each part of this revision has been carefully considered and scrutinized as she would have wanted it. Though she was not here to direct the actual writing, her spirit and vision have guided us in the accomplishment of the new edition which we believe will be of continued value to the many students, physicians, public health workers, nutritionists, teachers, nurses and social workers who have used it for so many years.

Present advances in the field of nutrition have resulted in more exact and detailed analyses of foods, which not only have made it possible to present the latest available figures but also to extend considerably the table on food values. More food exchanges have been added, which will allow greater variety in the therapeutic diets and offer a wider scope in the planning and preparation of those unusually restricted. Through improved methods, valuable figures for the amounts of sodium and potassium in many of the common foods have been introduced and are now included in two additional columns in the major table of food values and measures.

There have been but few changes in Part I on the construction of the normal diet, environmental factors which influence the effectiveness of the diet, and the

education of the patient since the original work has repeatedly proved its usefulness and practicability. Certain illustrations and forms have been reorganized to include all of the new figures available. The leaflet, "Feed Your Body to Protect Your Health", which has long been a valuable teaching aid, as well as a sample of the picture charts have also been revised. The form of several tables has been changed wherever it was thought that greater consistency in the lay-out would facilitate its use and achieve ease in reference, comparison and interpretation. All typical diets have been re-evaluated in terms of the most recent figures, and necessary changes have been made in the typical menus.

The construction of the therapeutic diet and the dietary outlines have been carefully revised by Dr. Wilma McVey, who planned the revisions with Miss Stern and later developed these plans with a thoroughness which could be accomplished only with a full understanding and appreciation of Miss Stern's ideology. Dr. McVey has incorporated in the revision the newer medical knowledge in theory and diet therapy, particularly in regard to diabetes, gastrointestinal disease, liver disease, nephritis, pregnancy and the newly added outlines on cardiovascular disease.

We, as well as Dr. McVey, wish to express our gratitude to the following physicians for their assistance and counsel in the revisions pertinent to their respective fields: Dr. George W. Thorn, Hersey Professor of the Theory and Practice of Physic, Harvard Medical School, and Physician-in-Chief, Peter Bent Brigham Hospital—nephritis and liver disease; Dr.

Samuel Proger, Professor of Medicine, Tufts College Medical School, and Chief of Staff, Joseph H. Pratt Diagnostic Hospital, and Physician-in-Chief, New England Center Hospital—cardiovascular disease; Dr. Joseph Rosenthal, Assistant Professor of Medicine, Tufts College Medical School, and Physician-in-Charge of the Diabetic Clinic, The Boston Dispensary—diabetes; Dr. Katherine S. Andrews, Instructor in Medicine, Tufts College Medical School, and formerly Physician-in-Charge of the Gastro-Intestinal Clinic, The Boston Dispensary—peptic ulcer; Dr. Ethan Allan Brown, Lecturer in Medicine, Tufts College Medical School, and Physician-in-Charge of the Allergy Clinic, The Boston Dispensary—allergy.

We are indebted to Miss Clare Forbes for her many contributions and great care

in proofreading the final manuscript; to Mrs. Reva Singer for invaluable assistance in the set-up of the tables; to Miss Elizabeth Barden and the dietetic interns of the Frances Stern Food Clinic for their willing assistance at all times. We are deeply grateful to Mrs. Helen Segel for her untiring care in assembling and typing the manuscript. We wish to express our gratitude to Mr. Frank E. Wing, Director of The Boston Dispensary, and Miss Abbie E. Dunks, Assistant Director, for their constant efforts in maintaining the fundamental beliefs upon which the Frances Stern Food Clinic was founded.

Finally, to the publishers we wish to express our gratitude for their ready assistance and cooperation.

Helen Rosenthal
Pearl C. Baker

PREFACE TO THE FIRST EDITION

In 1918 a special clinic was organized as a part of the Medical Clinic of The Boston Dispensary, to undertake the dietetic treatment of the ambulatory patient. This was the Food Clinic of The Boston Dispensary, the first of its kind, functioning with a dietitian to guide and help the outpatient in fulfilling the food prescription given by the physician.

A satisfactory technique had to be developed for this new type of service. Principles of organization and methods of procedure had to be formulated, and relationships with other departments established. Food treatment for the outpatient had to be planned not only with respect to physical requirements as stated in the medical record, but also with careful consideration of mental capacity and attitudes, and of the influence of the environment—the home, the school and the occupation. Means had to be devised for securing and recording data. Moreover, for intelligent participation in making the dietary effective the patient had to be given an understanding of the underlying principles, and this entailed the development of educational methods and materials.

In the interests of this many-sided service, various forms, materials and data were gradually assembled and organized for the use of both dietitian and patient. The growth of the clinic and the increasingly intensive work with the patient gradually effected a closer interdependence of the physician, social worker, nurse, dietitian and health educator, in a unified plan of treatment.

Staff workers came to the Food Clinic for materials and advice. Students came also, and gradually various schools and

hospitals, in this country and abroad, were sending students, singly, in groups and in classes, from the fields of medicine, dentistry, home economics, applied dietetics, social service, nursing and public health, for periods of study, observation and practice. The interest shown gave further impetus to the development of the material that the dietitian had been using for her own and her patients' needs and to its formulation in terms of the interests of various types of students.

A group of dietitians from local medical institutions gathered in the Food Clinic several years ago, to discuss methods and materials for use in teaching applied dietetics. The first drafts of some of the tables included in this book were revised by this group: Mrs. Quindara Oliver Dodge, Mrs. Beula Becker Marble, Miss Maniza Moore, Mrs. Octavia Hall Smillie and Mrs. Thelma Tubbs Currier. The belief and encouragement of this group was an added stimulus to accomplishment. Since that time the Food Clinic has expanded the tables, added new ones and confirmed their practicability through use with patients and students.

Thus the book can be pictured as having been in the process of development for many years.

In 1920, the South End Diet Kitchen, founded in 1875 to provide "food for the sick poor," decided that it could best fulfill its purpose by contributing to the support of the Food Clinic, and to that end it eventually transferred its funds to The Boston Dispensary. The directors, under the leadership of their president, Mrs. Richard M. Saltonstall, have always encouraged every development of theory, method and practice in the Food Clinic.

There have been so many friends and helpers, both within and without the Food Clinic, that it would be impossible to mention all by name, and this opportunity is taken to express to them again, as if each were named, the thanks that have been given them by the spoken word. Grateful recognition is given to past associates in the Food Clinic, for their various contributions: to Miss Bertha Wood, who in the early years stated effectively in her book, "Food for the Foreign Born," principles that the Food Clinic, from its inception, has held to be fundamental; to Miss Gertrude T. Spitz, whose devoted service to the Food Clinic movement has strengthened faith in it, helped to develop its philosophy and won for it many adherents; to Mrs. Rachel Meserve Hoyt, who demonstrated the possibility of the education of the patient; to Mrs. Jean Reyner Costigan, who collaborated in formulating the first drafts of the Dietary Outlines and Tables of Food Values and Measures; to Miss Charlotte Raymond, whose great interest in the field of applied dietetics has added much to the dissemination of knowledge of the customs and food habits of the foreign born; and to Miss Mabel Stimpson who, through a study of a group of children in the Children's Medical Clinic, demonstrated the importance of a careful consideration of food habits and environmental influences in medical treatment.

To present associates in the Food Clinic, special appreciation is gratefully expressed: to Miss Elizabeth Barden for admirable service rendered to patients, students and co-workers, in testing and strengthening through years of practical application the theories and data that constitute this book; to Miss Helen Finkelstein, who correlated closely the dietetic treatment of the patient as given

in the Food Clinic, in the Diagnostic Ward and in the pre-school Dental Clinic, in the interests of both student and patient; and to Miss Catharine Hazen, who demonstrated the value of educational methods with food allergy patients. Grateful acknowledgement is given to Miss Mary Pfaffmann, the health educator of the staff, who developed methods and compiled materials for teaching children and mothers the relation of food to body needs, and who has rendered invaluable service in connection with the preparation and editing of this book; and to Miss Florence Goldman for her great care, intelligence and patience in typewriting the manuscript.

Throughout the years, Dr. Stuart B. Foster, of the Department of Chemistry, State Teachers' College in Framingham, Massachusetts, has reviewed and verified the data contained in the Tables, and with his guidance the Foreword to the Tables was written. His cooperation is deeply appreciated, and also that of Dr. Hazel E. Munsell, U. S. Department of Agriculture, Bureau of Home Economics, who kindly reviewed the data given in the vitamin chart.

The section concerning the mental and emotional factors that influence the diet has been reviewed by Dr. Augusta F. Bronner, of the Judge Baker Child Guidance Center. In demonstrating the interaction of the mental life and food habits, the Food Clinic has been encouraged by Dr. Bronner's recognition of the importance of this relationship.

The assistance of various physicians has been most valuable in formulating the medical data included in the text and the Dietary Outlines. Co-workers in the Department of Social Service of The Boston Dispensary have appreciated, from the pioneering days of the experi-

ment, that the work of the Food Clinic is vitally related to their own service; and their understanding of social factors in relation to food has contributed much to the philosophy herein outlined.

The book is the result of labor that is felt to be closely integrated with the aims and service of The Boston Dispensary as a whole. Deep appreciation is expressed to the Director, Mr. Frank E. Wing, and also to Mr. Michael M. Davis, Director

when the Food Clinic venture was begun, to the Administrative Staff and co-workers in every department, for their constant encouragement and faith.

Miss Dorothy B. Hacker, valued associate in the Food Clinic for several years, gave, devotedly, time and labor to the first drafts of the material of this book, which counted as a long step toward the final accomplishment.

1936.

F. S.

THE USE OF THE BOOK

The aim of this book is to present a procedure for planning and teaching normal and therapeutic diets. The methods herein described are based on certain principles of nutrition that serve as guides in the construction and the use of diets for the needs of the individual patient, making it unnecessary to memorize formulas. A fundamental principle is that food is composed of the same constituents as the body, and when taken into the body and broken down by physiological processes supplies the substances with which to build and repair tissue, provide energy and regulate the functioning of the different body parts. The therapeutic diet is to be conceived of as a deviation from the normal diet. With the realization of these principles, the normal diet is considered in relation to normal physiology; whereas the therapeutic diet, considered in terms of pathological physiology, may call for an increase or decrease in the amount of a food constituent, or the omission or change in consistency of a food or foods as used in the normal diet.

Throughout the book the body's food requirements are based on height, age, sex and activity. Most of the typical diets are based on the requirements of a man weighing 70 kilograms. Diets for pregnancy and lactation are based on the requirements of a woman with the average body weight of 56 kilograms, and that of the child is based on a nine-year old boy with the average body weight of 30 kilograms. Since the same individuals, in terms of normal weight and activity, are considered throughout the book, it is possible to demonstrate clearly the relationship between the diets.

Part I develops each step in the construction of normal and therapeutic diets in relation to body needs, and provides the basic standards upon which these diets are computed. Much of this part is devoted to the importance of the nutritional history as the first step in the planning of a diet and the importance of the successful education of the patient in the principles underlying his diet.

Chapters on the education of the patient present material and methods helpful in teaching not only the principles of normal nutrition but also their application to the therapeutic diet. These chapters discuss such matters as *Gaining the confidence and cooperation of the patient*; and *Conference with the patient*. The chapter on the education of the patient on the therapeutic diet discusses further: *The modification of the normal diet*; *Procedure in teaching the patient*; the *Application of the procedure to specific diseases*.

Part II consists of a series of tables which may be used with or without the text to simplify the computation of the diet. They will serve as reference, thus furnishing data fundamental in planning and computing diets.

Part III comprises a series of Dietary Outlines, that are both complete and concise, for the dietary treatment of various diseases or abnormal conditions. Each Dietary Outline considers the following factors: *Body part affected*; *Physiology*; *Pathological physiology or abnormal condition*; *Dietetic treatment*; *Other contributing factors in dietetic treatment*; *Food for the day*; *Reason for the selection of the foods used in the special diet*; *Meals*; *Environmental factors that influence the*

effectiveness of the diet; Education of the patient; Abnormal conditions and diseases that may be found in association with the particular disease described.

Summary of all this data is found in a convenient tabular form at the beginning of Part III and will provide an excellent means for the comparison of all diets.

In *Part IV* the normal and therapeutic diets are computed to illustrate how the food prescription may be fulfilled, and the figures are starred when the amount is below the recommended allowance. Suggested meal plans and menus, of different cost, are given for each diet. It is to be remembered that these diets are only illustrative, to teach the principles of applied dietetics. The foods in the menus may be exchanged for foods of equivalent food values.

The material of the book has been arranged in its present form to be of value to workers in various fields of nutrition. It will be helpful to the *physician* in the dietetic treatment of the patient, in the office and hospital as well as in the clinic. The *social worker* will find it a means of increasing her understanding of the principles of diet therapy and of the influence of related environmental factors, and will be better able to help

the patient to make the best possible social and economic adjustments to his diet. To the *student* in home economics or applied dietetics already familiar with the principles of the science of nutrition, experience in applying these principles in the treatment of an individual patient in terms of his particular needs will render them vital. The *teacher* and *public health worker*, deeply concerned in community health and serving as interpreters of scientific findings to the community, know the great need of teaching the relation of food to the body. To them the book will be a helpful guide. For instructors in nutrition it will be a help in organizing their courses. The *nurse* realizes the importance of a knowledge of nutrition as a part of the general health program, and as a therapeutic measure, and will find here how to make practical application of this knowledge.

All data upon which the book is based have been taken from the most recent and authoritative sources. While all the information given can be found scattered among various books and journals, this compilation offers, in one place, as much as possible of the material useful for planning and teaching diets.

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PART I

CHAPTER 1

THE DAILY FOOD REQUIREMENTS OF THE BODY

THE RELATION OF FOOD TO THE BODY

The body is a builder of its own substance and finds its materials in food. Food is composed of the same constituents as the body, and when taken into the body and broken down by physiological processes offers the substances with which to build and repair tissue, provide energy, and regulate the functioning of the body parts. A study of the needs of the body indicates that food must supply calcium and phosphorus for the skeleton (bones and teeth), iron for the blood, vitamins for growth and health, these and other minerals and vitamins for certain regulatory processes of the body, protein for tissue, carbohydrate and fat for energy. This relationship between the composition of food and the composition and needs of the body is basic and must be considered in all dietetic treatment, both normal and therapeutic. A knowledge of the food requirements of the body, of the food constituents necessary to fulfill them and of the foods that are sources of the various food constituents is fundamental in the construction of a diet (Tables 1, 2, 3).

RECOMMENDED ALLOWANCES OF FOOD CONSTITUENTS

Scientific studies have shown in what amounts, approximately, the food constituents of carbohydrate, protein, fat, calcium, phosphorus, iron and the vitamins are needed to keep the body in health and to prevent or alleviate certain pathological conditions.

"Average weight" refers, in this book, to the weight of the individual based on sex, height and age,—designated variously in the literature as the "desired," "normal," "ideal," "optimal," or "expected" weight. Tables giving the average weight for individuals of different ages and heights have been compiled by various authorities (Tables 5 to 12). The average weight can be only an approximate measurement, at best, since the weight of an individual is influenced by type of build and by certain other factors. Thus the average weight must have a range within a limit—a variation within 10 per cent for the adult is considered safe—and should be used only as a guide. Tables usually express the weight in pounds, but these figures may be converted into kilograms,¹ the unit of the metric system commonly used for body weight in computing food requirements (Table 6).

Protein has for its primary function the building and repair of tissue (Table 1). It also supplies energy, each gram providing 4 calories. The extent to which a protein can perform its function depends on the amino acids it contains. The essential amino acids are those which must be obtained from the food because the body cannot synthesize them in amounts adequate for normal growth and maintenance of tissue. Proteins

¹ 1 kilogram = 2.2 pounds. 1 gram is approximately $\frac{1}{16}$ of an ounce. The units of the metric system are generally used abroad and in all scientific work (Table 19).

such as casein in milk and ovalbumin in egg which contain all the essential amino acids in amounts sufficient for the maintenance of life and growth when fed experimentally to animals as the sole food are designated "complete protein." Those proteins which lack one or more of the essential amino acids, such as zein in corn, are called "incomplete," and will not maintain either growth or life when used as the sole food in feeding experiments.

In the evaluation of various foods as sources of suitable protein, it must be remembered that practically all foods contain more than one kind of protein. Corn and wheat, for example, contain both complete and incomplete proteins. The mixtures of protein naturally found in some foods, however, are superior to others because they contain a proportion of amino acids which more closely fulfills body needs. Proteins of foods from animal sources—milk, cheese, meat, fish, poultry and eggs—are superior in nutritive value to those obtained from plants. Among the plant protein combinations, the soy bean very closely approximates the animal proteins in nutritive value. Cereal grains, though inferior to most animal proteins, have a more efficient protein assortment than the legumes, vegetables and fruits. The supplementary relationship of different food substances as sources of protein is extremely important. For optimal nutrition, it is necessary to include animal protein in the diet in order to ensure an adequate supply of all the essential amino acids. Nevertheless, when animal protein is limited for either economic or therapeutic reasons, cereal grains and vegetable proteins may form the basis of the diet if they are carefully supplemented by foods (such as milk) which reinforce their

content of certain amino acids. Progress in recent years in the study of exact human requirements for amino acids and of the amino acid content of foods suggests that, in the future, we may be able to utilize the supplementary relationship of proteins far more fully than present knowledge permits.

For the normal adult, the type of mixed diet common in this country usually guarantees an adequate amino acid supply for the maintenance of good health. However, an especially careful selection of highly nutritive protein foods (animal sources) is important during childhood. The Food and Nutrition Board of the National Research Council (1948) recommends that at least $\frac{1}{3}$ to $\frac{1}{2}$ of the total protein for children be obtained from animal sources. The same is desirable for adults although somewhat less is sufficient. The requirement for protein of high biological value is also increased during pregnancy and lactation and whenever there is need for the repair of damaged tissue.

For the adult, the daily requirement of protein ranges from 1-1½ grams per kilogram of average body weight (Table 2). One gram per kilogram is often given as the recommended allowance. Numerous experiments have shown that the healthy adult may be maintained in normal condition by the use of $\frac{1}{2}$ gram per kilogram, but the usual daily intake of a person whose diet is not restricted for therapeutic or economic reasons will often approximate 1½ grams per kilogram of average body weight.

The rapid growth of the child demands a high allowance of protein (Table 2). The recommended daily allowances per kilogram of average body weight are as follows:—for the infants—about 3½-4 grams; for children from 1-12 years—

about 2-3½ grams; and for teen-age girls and boys—about 1½-2 grams.²

Another standard used to compute the daily requirement of protein is based on the caloric requirement for moderate activity. On this basis it is estimated that 10 per cent of the calories required by the adult and 15 per cent of the calories required by the child should be derived from protein.

Carbohydrate provides primarily energy for body activities, and at the same time exerts a protein-sparing action (Table 1).

For the adult, the daily requirement ranges from 4 to 6 grams per kilogram of average body weight, depending upon the degree of activity and the amount of fat used in the diet. Each gram of carbohydrate provides 4 calories (Table 2).

For the child, the carbohydrate requirement per kilogram of average body weight is much greater, to provide not only for increased energy expenditure but also for increased rate of growth. The recommended daily allowances per kilogram of average body weight are as follows:—for children from 1-12 years, about 6-14 grams; and for teen-age girls and boys, about 6-8 grams (Table 2).²

On the basis of the caloric requirement, 50 per cent to 60 per cent of the calories for the adult and 50 per cent of the calories for the child should be derived from carbohydrate.

Fat is an essential constituent of every body cell. Like carbohydrate it supplies energy for the body's activities and has a protein-sparing action (Table 1). By weight it contributes over twice as much energy as carbohydrate, giving 9 calories per gram.

The recommended daily allowances of fat per kilogram of average body weight are as follows:—for the moderately active adult, about 1-2 grams—20-25% of the total calories (for the very active adult, 30-35% of the total calories); for children, 30-35% of the total calories—for children from 1-12 years, about 2-5 grams, for teen-age girls about 1-3 grams, and for teen-age boys about 2½-3 grams.³

The daily requirement of fat is dependent upon the degree of activity and the amount of carbohydrate in the diet. On the basis of the figures stated above, a proper ratio will be maintained between the carbohydrate and the fat content of the diet. Some highly unsaturated fatty acids have been shown to be nutritionally essential, but it seems permissible to assume that normal dietaries will supply this need without any special planning.⁴

The *energy requirement* is measured in heat units expressed in calories. The body's requirement for fuel to supply energy must consider both the basal need of the body and the increased need for various grades of activity as illustrated on page 99.

The *basal energy requirement*—that is, the energy requirement of the body as nearly as possible at absolute rest,—represents the minimum amount of energy needed for the inner workings of the body, such as of the heart and lungs, and for its fundamental chemical processes.

There are several ways in which this can be estimated. The *actual basal energy requirement* may be determined by means of a respiration apparatus which measures the oxygen consumption of the

² Food and Nutrition Board of the National Research Council, *Recommended Dietary Allowances*. Revised, 1948.

³ Food and Nutrition Board of the National Research Council, *Recommended Dietary Allowances*. Revised, 1948.

⁴ Sherman and Lanford, *Essentials of Nutrition*, 2nd ed., p. 23, Macmillan Co., 1943.

individual, from which may be computed the basal energy requirement expressed in calories.

The *body surface area* is a basis used in predicting the basal energy requirement. It is determined from the actual height and weight of the individual. By means of the Dubois Surface Area Chart or its modification (Boothby and Sandiford), and tables giving the calories needed per square meter per day, the basal energy requirement in calories can be estimated (Tables 13 and 14).

The number of calories needed per kilogram of body weight per day, as estimated from many determinations of the basal metabolic rate of normal persons, is a practical method of ascertaining the basal energy requirement in terms of the *average body weight*.

"Standards for basal metabolism on children are still a matter of research. Talbot (F. B.) has proposed standards for boys and girls on the basis of body weight,"⁵ while other investigators have proposed various other standards. Therefore in a discussion of the caloric needs of children it would seem best to compare the actual basal metabolism of the child with different standards before determining whether or not it is within normal range.

The *total energy requirement* for the day may be determined by using the basal energy requirement, plus stated increases for the various grades of activity (Table 15). Another method is based on the average weight and the number of calories needed per kilogram of body weight according to the degree of activity (Table 15). Recommended caloric allowances for both adults and children as compiled by the Food and Nutrition Board of the

National Research Council (1948) will be found in Table 16. These figures are subject to modifications of plus or minus 15-20 per cent according to conditions. It is of considerable interest to compare the allowances for children with the actual caloric intake on a large group of children in a study by Beal, Burke and Stuart (Table 17).

To determine whether the estimated amounts of the food constituents—carbohydrate, protein and fat—fulfill the energy requirements, the number of grams of carbohydrate and of protein are multiplied by 4, the number of grams of fat by 9, and the results are totaled. Since the amounts of carbohydrate and fat are given in proportion to the degree of activity of the individual, the results should be in approximate accord with the recommended caloric requirement based on the average weight of the individual and the degree of activity. Following the practice of supplying the food constituents in terms of body weight, it will be found that in most cases the energy requirements are fulfilled.

The *mineral requirements* of the body are receiving a great deal of attention in research and in applied dietetics. Certain minerals—calcium, phosphorus, iron, iodine, copper, sodium, potassium and magnesium—have been found to have most important functions in connection with the regulation of body processes. The study of other minerals, while it has not so far yielded conclusive evidence with respect to their definite relation to body processes, indicates their possible relationship to the diet.

The recommended mineral allowances for the adult are estimated to be 1.0 gram of calcium, 1.50 grams of phosphorus and 12 to 15 milligrams of iron per day (Table 2).

The recommended mineral allowances

⁵ Sherman, Henry C., *Chemistry of Food and Nutrition*, 7th ed., pp. 165-167, Macmillan Co., 1946.

for the child are estimated to be 1 to 1.5 grams of calcium and 1 to 1.5 grams of phosphorus per day. The iron allowances for the child varies from 6 milligrams (under one year of age) to 15 milligrams (children in their teens) per day (Table 2).

These allowances are optimal and provide a good margin of safety. The Food and Nutrition Board of the National Research Council estimates that its recommendations afford a 30 per cent margin of safety in most categories. It is generally considered that if the diet fulfills the calcium, phosphorus and iron requirements, there will be sufficient amounts of the other minerals to meet body needs. The requirement of iodine is probably about 0.002 to 0.004 milligrams daily per kilogram of body weight, making a total of 0.15 to 0.30 milligrams daily for the adult.⁶ In areas where there is inadequate iodine in the soil, this need can be met by the regular use of iodized salt.

The *acid-base balance* is given consideration due to the claim advanced that there is an advantage in neutralizing acid-forming foods by the selection of equivalent amounts of base-forming substances. Sherman stresses the fact that it is still an open question whether this is of practical importance to human nutrition under ordinary circumstances.⁷ It has been found that when sufficient kinds and amounts of food are given to supply

the necessary food constituents to meet the body requirements, an excess of base-forming elements is present (Tables 52 to 54).

Vitamins are considered essential for growth and health. The relative values of different foods as sources of the various vitamins are given in figures, and the recommended daily allowances as given in Table 2 are those given by the Food and Nutrition Board of the National Research Council (1948). A well-balanced diet will usually fulfill the requirement for vitamin K, except for the newborn infant. Supplementary vitamin K should be given to the mother before delivery or to the infant immediately post partum. There is increasing evidence that folic acid should be recognized as an essential food constituent, but the exact human requirement is not known at the present time.⁸

THE FOOD PRESCRIPTION

The food prescription used in this book is the statement of the amounts of the food constituents—carbohydrate, protein, fat, calcium, phosphorus, iron and vitamins—and of the calories recommended per day for an individual of a certain age, sex, height, weight and activity. The units of measurements used are given in the Table of Weights and Measures (Tables 18 and 19). The food prescription is written on the basis of the foregoing data and may be summarized as follows:

⁶ Food and Nutrition Board of the National Research Council, *Recommended Dietary Allowances*. Revised, 1948.

⁷ Sherman, Henry C., *Chemistry of Food and Nutrition*, 7th ed., p. 252, Macmillan Co., 1946.

⁸ Food and Nutrition Board of the National Research Council, *Recommended Dietary Allowances*. Revised, 1948.

SUMMARY OF ESTIMATED DAILY BODY NEEDS IN TERMS OF FOOD
CONSTITUENTS

A BASIS FOR THE FOOD PRESCRIPTION

Basic Data		Example of Data Applied to a Typical Individual	
Average Weight.....		154 pounds or 70 kilograms	
Sex.....		Male	
Age.....		30 years	
Height.....		5 feet, 8 inches	
Activity.....		Moderate	
Protein Standard per kilogram per day, 1-1.5 grams.....		$70 \times 1.5 = 105$ grams protein	
Fat Standard per kilogram per day, 1-2 grams....		$70 \times 2 = 140$ grams fat	
Carbohydrate Standard per kilogram per day, 4-6 grams.....		$70 \times 5 = 350$ grams carbohydrate	
Energy Requirement: per kilogram per day mod- erate activity, 40-45 calories.....		$70 \times 40 \text{ to } 45 = 2800 \text{ to } 3150$ calories	
Calories from food constituents:			
Protein, 1 gram = 4 calories.....		$105 \times 4 = 420$ calories	
Fat, 1 gram = 9 calories.....		$140 \times 9 = 1260$ calories	
Carbohydrate, 1 gram = 4 calories.....		$350 \times 4 = 1400$ calories	
		Total	3080 calories
Mineral Standards per day*			
Calcium, 1.0 gram.....		Calcium, 1.0 gram	
Phosphorus, 1.5 grams.....		Phosphorus, 1.5 grams	
Iron, 12 milligrams.....		Iron, 12 milligrams	
Vitamin Standards per day*			
	Man	Woman	
Vitamin A, I.U.....	5000	5000	Vitamin A, 5000 I.U.
Thiamine, micrograms.....	1500	1200	Thiamine, 1500 micrograms
Riboflavin, micrograms.....	1800	1500	Riboflavin, 1800 micrograms
Niacin, milligrams.....	15	12	Niacin, 15 milligrams
Ascorbic Acid, milligrams.....	75	70	Ascorbic Acid, 75 milligrams
The Food Prescription.....		{ Protein, 105 grams; Fat, 140 grams; Car- bohydrate, 350 grams Calories, 3080 Calcium, 1.0 gram; Phosphorus, 1.5 grams; Iron, 12 milligrams. Vitamin A, 5000 I.U.; Thiamine, 1500 micro- grams; Riboflavin, 1800 micrograms; Nia- cin, 15 milligrams; Ascorbic Acid, 75 milligrams	

* Recommended by the Food and Nutrition Board of the National Research Council, 1948.

CHAPTER 2

THE CONSTRUCTION OF THE NORMAL DIET

THE BASIS FOR THE SELECTION OF FOOD

When the food prescription has been written, a selection must be made of the kinds and amounts of food to fulfill it. In practice, the actual food intake of the individual is used as a guide in choosing the foods to be included in the prescribed diet, since it is desirable to adhere as closely to usual food habits as is consistent with health needs.

The *food intake* or accustomed diet of the patient, and a review of the foods that might be used to supply the food constituents needed, would seem to indicate that there is an unlimited number of different foods for choice. But when these foods are studied and classified they fall into a small number of groups; namely milk and its products; eggs; meat, fish and poultry; fats and oils; fruits; vegetables; legumes; cereals (flour, cereals, bread and crackers); sweets; and nuts.

The *food constituent* of which a particular group of foods is a good source determines the value to the body of the food within that group. Milk and cheese, eggs, meat, fish and poultry are given first consideration as sources of *complete protein*; potato, legumes, cereals, breads and nuts also contribute to the protein content, but being incomplete must be combined with the complete protein; cream, butter and oils for *fat*; cereal products, sugar, fruits and vegetables for *carbohydrate*; milk, cheese, vegetables and fruits for *calcium*; meat, eggs, whole grain and enriched products, vegetables and fruits for *iron*; eggs, milk, meat, fish and certain vegetables for *phosphorus*; and milk and its products, fortified vege-

table fats, meat, eggs, the whole grain and enriched cereals, fruits and vegetables for *vitamins* (Table 3). It will be noted that many foods contain more than one of the food constituents, and may even be rich in several of them. Some contain only a single one, as sugar in the carbohydrate group, vegetable oil in the fat group.

An important development in recent years is the process of enriching foods. White bread is now enriched with thiamine, riboflavin, niacin and iron. Calcium and Vitamin D have been suggested as other desirable additions. Many cereals have been restored to the whole grain nutritive values of thiamine, riboflavin, niacin and iron for the various grains. In addition to this restoration some cereals are further fortified with Vitamin D. The Vitamin A content of oleomargarine and other fats has been increased. By various methods the Vitamin D content of milk can also be greatly increased. It is desirable to encourage the use of fortified foods.

The *protective diet* is another helpful guide in fulfilling a food prescription. Science states that if certain groups of foods are included in the diet every day in certain amounts, the food constituents necessary for the protection of health will be provided adequately,—and experience verifies this. The protective diet includes the following:

Milk:

1 pint for the adult and 1 quart for the child daily.

Cheese*:

1 ounce.

Egg*:

One, preferably every day.

Meat, fish or poultry*:

$\frac{1}{4}$ pound (4 ounces).

* These foods may be exchanged for other protein foods. (One-third to one-half the amount of protein must be complete protein). See protein exchanges, Table 31.

Fats:

9 teaspoons per day of fat, including butter, fortified oleomargarine, and other kinds of fat. At least 3 teaspoons should be fats containing vitamin A.

Bread, cereals, flour and flour products:

Use 6 or more servings per day.

Vegetables:

At least 2 servings every day. A green vegetable ensures vitamin A.

Potato in addition to other vegetables if desired.

Fruits:

At least 2 servings every day. A citrus fruit daily ensures ascorbic acid.

Sugar and Desserts:

Amounts dependent upon caloric needs.

This is a general statement of the optimal amounts of food that provide the

necessary food constituents and sufficient calories. The choice of foods in the diet should always have reference to the specific needs of the individual. Individual taste may be satisfied by substituting for a food not desired another of approximately equivalent value,—a procedure discussed in detail in the following pages.

Environmental factors must receive careful consideration in the construction of a diet, since the practice of good habits of hygiene, mental as well as physical, is essential to the success of treatment and is dependent in part upon conditions in the home, the school, and in occupation (Part I, Chapter 4).

A *nutritional history* of the patient, obtained with the aid of a special outline (p. 000) will be found helpful in the study of environmental factors. The data secured need not follow the sequence specified in this outline but may be set down according to the response, interest and attitude of the patient as the conference or interview proceeds.

The form for the Nutritional History of the child uses the heading "School," instead of "Occupation" and "Education" as for the adult, and the family relationships are given in greater detail.*

*SCHOOL	Location	Distance	Walk	Ride
Grade		Recess		
Irs. A.M.		Lunch Time		
P.M.		Study Periods		
Leaves for School—Time		Returns from School—Time		
Extra School Activities:	Home Lessons —	Hours of study		
	Music Lessons —	Hours of practice		
	Other Lessons —	Hours		
	Athletics	Time for play		Other activities

FAMILY RELATIONSHIPS:**Attitudes:**

Parents to each other:

Parents to children:

Children to parents:

Children to children:

Child to relatives:

Relatives to child:

Type of Parents:

Mother:

Father:

NUTRITIONAL HISTORY—ADULT

Name	Diagnosis	Nationality	Date
		Language	B.D. No.
Address		Religion	S.S. in B.D.
			S.S. Outside
			S.E.D.K.

Sex	Age	Ht.	Ft.	In.	Av. Wt.	Lbs.	Kilos	Pr. Wt.	Lbs.	Kilos
-----	-----	-----	-----	-----	---------	------	-------	---------	------	-------

FAMILY	No.	Sex	Age	Occupation	Health
--------	-----	-----	-----	------------	--------

Adults

Children

OCCUPATION:

Type of Work

Home

Outside Home

EDUCATION:

Previous Training:

Graduated from:

Present:

Trade School

Evening School

Extension Classes

Music Lessons

Continuation School

Other

HOUSE—Rooms no.

Bedrooms No.

Toilet—common
private

Piazza

Flights

Yard

Source of heat

Ventilation

No. windows

Bathroom

location

light

water—hot, cold

how supplied—summer, winter

Bathtub—stationary

portable

Shower

Household Equipment: Facilities for Food Preparation

Stove—Kind

Saucepan—Sieve—Kettle

Refrigerator—Kind

Double Boiler—Mixing Bowl

NEIGHBORHOOD: accessibility to Public bath—Public playground—Park—Community center
use of

INCOME OF FAMILY: Total Amount

Earnings

Aid: Public

Private

Other sources

Expenditures:

Rent

Light and Heat

Electricity

Gas

Wood

Coal

Oil

Ice

Carfare

Insurance

Clothing

Church

Recreation

Laundry

Cleaning Material

Food

HYGIENE—Day's Routine

Rising time	Breakfast time	Rest	Time	Place
Cleaanliness of Body				
Equipment: Soap—face cloth—towel—nail brush—file—comb—brush—				
Washing: Frequency		Head	Neck	Ears
Facilities	Place	Type		
Bathing: Frequency				
Facilities	Tub	Shower	Sponge	Municipal
Care of Teeth—Frequency of cleaning				
Equipment: brush				
Condition of teeth				
Dental care				
Elimination: Time	Bowel	Urination		
Sleeping Conditions:				
Location				
Bedroom	Size	No. occupants		
Windows, No.	Open	Closed		
Bed, No. in	With whom			
Bedtime	Hours of sleep	Kind of sleep		
Bedclothes	Amount	Kind		

RECREATION :

Clubs	Special Interests
Classes	Athletics
Movies	Reading
Radio	Home—Library
	Type of Literature

RELATIONSHIPS:

Family

Occupation

Companions

Mental Attitudes:

MEALS: Place Hour Time Allowed Time Taken Use of Difference

Breakfast
 Noon Meal
 Night Meal
 Extra Meals
 Regularity
 Appetite
 Companionship
 Atmosphere at meals
 Method of service in the home
 Table Self Family

FOODS:

Attitudes: Satisfactory Unhappy Finicky
 Resistant Resentful Dissatisfied

Idiosyncrasies
 Mastication

FIRST VISIT: FOOD INTAKE FOR THE DAY			FAMILY PURCHASES		FOOD HABITS
MEALS	Foods	Total Amts.	Per Week	Cost	
BREAKFAST	Milk, Fresh				
	Milk, Canned				
	Cheese				
	Eggs				
	Meat				
	Fish				
	Bacon				
NOON MEAL:	Cream				
	Butter				
	Fat-Oil				
	Fruit				
	Fruit, Dried				
	Vegetables				
	Legumes				
NIGHT MEAL:	Potato				
	Cereal, white				
	Cereal, Wh. Gr.				
	Bread, white				
	Bread, Wh. Gr.				
	Crackers				
	Flour				
EXTRAS:	Sugar				
	Desserts				
	Tea				
	Coffee				
	Cocoa				
	Candy				
Total Money Spent per Week					Food Deficiencies:
					C P F Ca Fe vitamin A, thiamine, riboflavin, niacin, ascorbic acid.

CALCULATION OF DIET

Av. Wt. _____ Kilos

NAME _____

CARD

FOOD INTAKE

FOON ORDER

Date	FOODS	GRAMS					Milli-grams	I. U.	Micro-grams	Micro-grams	Micro-grams	Milli-grams	Milli-grams					
		Total Amt.	C	P	F	Ca	Fe	Vita- min A	Thia- mine	Ribo- flavin	Niacin	Ascor- bic Acid	Micro- grams	Thia- mine	Ribo- flavin	Niacin	Ascor- bic Acid	
194	ORDER																	
	Milk																	
	Cheese																	
	Eggs																	
	M.F.C.																	
	Bacon																	
	Butter																	
	Fats																	
	Fruit %																	
	%																	
	%																	
	Veg. %																	
	%																	
	Potato																	
	Cereal																	
	Bread																	
	Crackers																	
	Sugar																	
	Dessert																	
	Totals																	

Total Calories

Boston Dispensary Food Clinic Fm 49A

FORM FOR COMPUTING THE PATIENT'S DIET

With an understanding of the environmental influences and the food habits of the individual, and with the standards of the protective diet in mind, the diet can then be computed to fulfill the requirements of the food prescription as outlined in Part I, Chapter 1, page 6. It is helpful to group the foods that are the sources of the same food constituent, using for that purpose a computation card such as the one given here (p. 13), or a similar form.

In the form illustrated (p. 15), the foods of the first group give, primarily, protein, the next fat, and the third, carbohydrate. As most of these foods contain minerals and vitamins as well, each food must be checked also for its content of calcium, phosphorus, iron and vitamins. When the prescription is filled, the total amounts of the various food constituents can be found and recorded at the bottom of the computation sheet. From the total number of grams of carbohydrate, protein and fat the total calories can be estimated.

FOOD VALUES AND MEASURES

In the Table of Food Values and Measures can be found the amount of a

serving of a particular food in terms of its weight in grams and its household measure, and the amounts of the various food constituents that it supplies (Table 22). In the case of milk, for example, the table states that one cup weighs 240 grams and contains 12 grams of carbohydrate, 8.4 grams of protein, 9.4 grams of fat, 0.283 gram of calcium, 0.223 gram of phosphorus, 0.17 milligram of iron, 384 I.U. of vitamin A, 96 micrograms of thiamine, 408 micrograms of riboflavin, 0.24 milligram of niacin, 2 milligrams of ascorbic acid, and 5 I.U. of vitamin D. The carbohydrate, protein and fat are figured to one decimal point, but for convenience the fraction may be disregarded, or rounded to the next whole number. If more than one serving of a food is required, the desired amount may be determined through multiplication.

COMPUTING THE DIET

The purpose of computing the amounts of the various foods in the diet is to secure the total amount of food constituents required for body needs. There is no definite procedure determining which of the food constituents—protein, fat or carbohydrate—shall be given first consideration. In order to have definite

FOODS SELECTED FOR PROTEIN VALUES*

Foods	Amounts		Grams					Milli-grams	I. U.	Micrograms		Milligrams	
	Household Measure	Grams	Carbohydrate	Protein	Fat	Calcium	Phosphorus	Iron	Vitamin A	Thiamine	Riboflavin	Niacin	Ascorbic Acid
Milk	2 c.	480	24	18	19	.566	.446	0.3	768	192	816	0.48	4
Cheese, American	2 T.	30	1	7	10	.262	.183	0.2	522	12	150	0.06	
Egg	1	50		6	6	.027	.105	1.4	570	60	170	0.05	
Meat, poultry†	4 oz.	120		23	18	.014	.264	3.6		171	204	6.36	

* $\frac{1}{2}$ T. gelatin and $\frac{3}{4}$ cup bouillon can be written in the computation sheet and would contribute 12 grams of incomplete protein.

† Figures represent 3 oz. beef (medium fat) and 1 oz. chicken.

FORM FOR THE COMPUTATION OF DIETS—USED WITH STUDENTS

DAY'S TYPICAL DIET FOR.....

Name	Sex	Age	Ht.....	Ft.....	In.	Average Wt.....	Lbs.....	K					
Record No.						Present Wt.....	Lbs.....	K					
Occupation	Nationality		Activity			Income							
Food Constituents and Calories Required for:	Gram			Calories	Grams		Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Carbo-hydrate	Pro-tein	Fat		Calcium	Phos-phorus	Iron	Vitamin A	Thia-mine	Ribo-flavin	Niacin	Ascor-bic Acid	Vitamin D
Normal Diet													
_____ Diet													

COMPUTATION OF DIET

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	House-hold Measure	Grams	Car-bohy-drate	Pro-tein	Fat	Cal-cium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Niacin	Ascor-bic Acid	Vitamin D
Milk														
Cheese														
Egg														
Meat, poultry														
Fish														
Cream														
Butter														
Oil														
Other fats														
Fruit: %														
%														
%														
Vegetables: %														
%														
%														
Potato														
Bread: Wh., enriched														
Whole Grain														
Other breads														
Crackers														
Cereals: Wh., enriched														
Whole Grain														
Sugar														
Jelly														
Molasses														
Other "sweets"														
Candy														
Desserts:														
Beverages:														
Totals of the Food Constituents														
Calories from the Food Constituents														
			Total Calories											

figures for the following example of the method of computing the diet, specific foods were chosen to fulfill the food prescription given on page 6. The selection of food on page 14 is *not* arbitrary.

Protein is considered first here in the same order as on the computation sheets (pages 13-15).

When each column is added, the following amounts of the food constituents will contribute in part to the requirement of the food prescription:—

Carbohydrate.....	25	grams
Protein.....	54	grams
Fat.....	53	grams
Calcium.....	.869	gram
Phosphorus.....	.998	gram
Iron.....	5.5	milligrams
Vitamin A.....	1860	I.U.
Thiamine.....	435	micrograms

lowing amounts of the food constituents will contribute in part to the requirement of the food prescription:—

Carbohydrate.....	5.5	grams
Protein.....	3	grams
Fat.....	59	grams
Calcium.....	.120	gram
Phosphorus.....	.110	gram
Iron.....	.2	milligram
Vitamin A.....	2019	I.U.
Thiamine.....	46	micrograms
Riboflavin.....	175	micrograms
Niacin.....	.18	milligram
Ascorbic Acid.....	2.0	milligrams

These foods will be seen to be valuable primarily for their fat and vitamin A content.

Carbohydrate is the third group of food constituents to be considered here. The amount needed for the food prescription

FOODS SELECTED FOR FAT VALUES

Foods	Amounts		Grams					Milli-grams	I.U.	Micro-grams	Micro-grams	Milli-grams	Milli-grams
	House-hold Measure	Grams	Car-bohy-date	Pro-tein	Fat	Cal-cium	Phos-phor-us	Iron	Vita-min A	Thia-mine	Ribo-flavin	Niacin	Ascor-bic Acid
Cream, light	$\frac{1}{2}$ c.	120	5.0	3	24	.112	.096	.1	1000	40	167	.16	2.0
Butter	6 t.	30			24	.006	.006		990		2	.02	
Mayonnaise	3 t.	15	.5		11	.002	.008	.1	29	6	6		

Riboflavin.....	1340	micrograms
Niacin.....	6.95	milligrams
Ascorbic Acid.....	4.0	milligrams

It will be noted that milk is the only one of these protein foods to carry carbohydrate. They provide, however, 50% of the complete protein needed, nearly 50% of the fat, almost enough calcium for the adult, almost all the phosphorus required, and $\frac{1}{2}$ the requirement of iron.

Fat is the next food constituent considered. With 53 grams of fat already contributed by the protein foods, sufficient amounts of other foods that are rich sources of fat will fulfill approximately the requirement of 140 grams. The following selection is made—again remember the choice is not arbitrary:

When each column is added, the fol-

is 350 grams. It will be noted that the foods already selected for protein and fat do not carry significant amounts of carbohydrate, and that only the limited amount of 30.5 grams has been accumulated. The foods that are chief sources of carbohydrate—fruits, vegetables (especially potato), bread, crackers, cereals, sugars, jellies and desserts—will provide the amounts necessary to fulfill the carbohydrate requirement. In the following selection special foods are chosen from the different groups of food used,—for example, rolled oats from the cereal group and the orange from the fruit group,—to demonstrate that some foods relied upon for carbohydrate will make significant contributions also of minerals and vitamins.

FOODS SELECTED FOR CARBOHYDRATE VALUES

Foods	Amounts		Grams					Milli-grams	I.U.	Micro-grams	Micro-grams	Milli-grams	Milli-grams
	House-hold Measure	Grams	Carbo-hydrate	Protein	Fat	Calcium	Phos-phorus	Iron	Vitamin A	Thia-mine	Ribo-flavin	Niacin	Ascorbic Acid
Fruit													
10 per cent—orange	1 sm.	100	11	1		.033	.023	.4	190	80	30	.20	49
15 per cent—apple	1 m.	150	23	1	1	.009	.015	.5	135	60	30	.30	8
20 per cent—banana	1 m.	100	23	1		.008	.028	.6	430	90	60	.60	10
Vegetables													
5 per cent—tomato	1 m.	100	4	1	.3	.011	.027	.6	1100	60	40	.60	23
5 per cent—lettuce, gr.	3 lvs.	30	1.0			.020	.007	.3	540	20	23	.07	7
5 per cent—string beans	1 s.d.	100	7.7	2.4	.2	.065	.044	1.1	630	80	100	.60	19
10 per cent—carrots	1 s.d.	100	9.3	1.2	.3	.039	.037	.8	12000	70	60	.50	6
Potato	1 m.	150	28.7	3.0	.2	.017	.084	1.1	30	165	60	1.80	21
Bread, white, enriched	3 sl.	90	48	7.5	1.8	.051	.090	1.8		216	126	1.98	
whole whcat	2 sl.	60	29	6	2.2	.036	.240	1.6		168	90	1.96	
Flour, enriched	1 T.	8	6	1		.001	.007	.2		35	21	.28	
Crackers	2	12	9	1.2	1.2	.002	.012	.2		4			
Cereals													
Macaroni, cooked	$\frac{1}{2}$ c.	150	22	4	.4	.007	.043	.4		39	24	.63	
Oats, rolled, cooked	$\frac{1}{2}$ c.	180	19.4	5	2	.015	.131	1.2		204	39	.33	
Sugar	9 t.	45	45										
Jelly	6 t.	40	26	.1		.006	.004	.1	4	4	8	.06	
Desserts													
Cake	3* sq.		42.7	3.3	7.0	.032	.053	.4	315	31	60	.22	

When each column is added, the following amounts of the food constituents will contribute in part to the requirement of the food prescription:—

Carbohydrate.....	354.8	grams
Protein.....	38.7	grams
Fat.....	16.6	grams
Calcium.....	.352	gram
Phosphorus.....	.845	gram
Iron.....	11.3	milligrams
Vitamin A.....	15,374	I.U.
Thiamine.....	1326	micrograms
Riboflavin.....	771	micrograms
Niacin.....	10.13	milligrams
Ascorbic Acid.....	143	milligrams

It will be noted that these foods supply almost the total carbohydrate required. However, they provide only incomplete proteins. The minerals and vitamins are in small amounts but make significant contribution to the total because these foods are eaten in abundance.

The total figures for the different food constituents show that the foods selected practically and satisfactorily fulfill the food prescription, as follows:

TOTAL VALUES OF FOODS SELECTED FOR FOOD PRESCRIPTION

	Grams			Cal-ories	Grams		Milli-grams	I.U.	Micro-grams	Micro-grams	Milli-grams	Milli-grams
	Car-bohy-drate	Pro-tein	Fat		Cal-cium	Phos-phorus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Niacin	Ascor-bic Acid
Food Prescription	280-420	70-105	85-140	3080	1.0	1.50	12	5000	1500	1800	15	75
Computed Diet	385.3	95.7	128.6	3081	1.341	1.953	17	19,253	1807	2286	17.26	149

The *calories* are checked by multiplying the total grams of carbohydrate and protein by 4, the fat by 9, and totaling the results. It has been stated (Part I, Chapter 1) that the amounts of carbohydrate and fat are prescribed according to the degree of activity. Therefore it is evident that if the food prescription for carbohydrate, protein and fat is fulfilled, the caloric requirement will be met.

The *minerals* are assured in adequate amounts since this diet is based on the plan of the protective diet. The calcium is adequate because liberal amounts of milk and cheese are used. The milk, eggs, meat, whole grain bread and cereal provide sufficient phosphorus. The iron comes largely from the meat, egg, whole grain and enriched bread and cereal, fruits and vegetables (Table 3). Other minerals, such as copper and manganese (Tables 43, 44), although important in the diet, are not computed here since it is generally assumed that a diet which supplies sufficient amounts of calcium, phosphorus and iron will carry these other minerals in amounts adequate for safety. Not until there is a pathological condition does definite consideration need to be given to iodine.

The *vitamins* will also be assured in sufficient amounts, since this diet contains the foods included in the protective diet. The figures for ascorbic acid represent the raw product. In the cooking of vegetables approximately 50% ascorbic acid will be lost which will decrease the total of 149 milligrams to 111 milligrams ascorbic acid, still well above the requirement.

The *acid-base balance* need not be a matter of concern because a protective diet contains liberal amounts of milk, fruits and vegetables, which give a basic ash, and therefore there is in this diet a sufficient excess of alkaline ash over acid ash (Table 54).

If in constructing a diet it is found that

the kinds and amounts of food selected do not meet the food prescription, it will be necessary to increase or decrease the amounts of food used, or to substitute foods with different food values, until the need is approximately met. After becoming familiar with the composition of the foods, the food prescription can usually be filled at the first computation, with few, if any, changes.

FOOD FOR THE DAY

Since the patient must assume the responsibility for carrying out the diet in the interval between visits to the clinic, information given him relative to the diet, to be of practical use, should be in accord with his established food habits, tastes and income, and should be presented to him in a clear and concise manner (Part I, Chapters 5 and 6).

The kinds and amounts of food that have been selected with the patient to fulfill the food prescription may be listed on a special form as follows:

A SAMPLE DIET AS WRITTEN FOR THE PATIENT

Food for the Day

Milk.....	2 cups
Cheese, American.....	1 ounce or 2 tablespoons
Egg.....	1
Meat.....	4 ounces or $\frac{1}{2}$ pound
Cream, light.....	$\frac{1}{4}$ – $\frac{1}{2}$ cup
Butter.....	6 teaspoons
Mayonnaise.....	3 teaspoons
Fruits.....	3 servings (1 citrus)
Vegetables.....	3 servings (1 green)
Potato.....	1 medium
Bread.....	6 slices
Cereal.....	2 servings
Sugar.....	9 teaspoons
Jelly.....	6 teaspoons
Desserts	
Cake, plain.....	3" square
Gelatin.....	$\frac{1}{4}$ tablespoon
Bouillon.....	$\frac{2}{3}$ cup ($\frac{1}{2}$ can)
Beverages	
Tea and coffee as desired	

EXCHANGES

To help him to vary the diet, the patient is given lists of exchanges,—that is, the amounts of various foods that may be substituted for the foods selected for the diet (Tables 28–51). Foods are considered exchanges for one another usually in only one food constituent, but the varying amounts of the other food constituents they contain must be taken into consideration. In the normal diet, based on the protective diet, where liberal amounts of the food constituents are allowed, these variations may usually be disregarded as they tend to equalize or balance themselves over a period of time. But in diets lacking this margin of safety because of limitations due to therapeutic or economic reasons, the exchanges must be more nearly identical in food value to the foods selected for the day.

It is not always necessary to give the patient printed lists of exchanges. In certain cases a few exchanges, very often specific ones requested by the patient, can be written on the diet list as they are explained to the patient. For example: Egg ... 1, 1 egg may be exchanged for 1 ounce of cheese or 1 ounce of meat, fish or poultry.

MEALS FOR THE DAY

On the same form with "Food for the Day" there is often written an arrangement of the diet in a "Meal Plan for the Day," for the guidance of those who wish explicit directions,—that is, not only concerning the amounts and kinds of foods they should eat, but as to when they should eat them and in what combinations (Tables 23 and 24).

The habits, occupation and other environmental conditions of the individual or family, influence the type of meals taken. For example, there is the American breakfast as distinguished from the Continental breakfast of coffee, rolls and butter, without fruit (Part I, Chapter 4).

Most authorities consider it advisable to give children their heavy meal at noon and the light meal in the evening. This may mean that adjustments must be made for the adult members of the family who are not at home at noon and so would have dinner in the evening.

A *meal plan for the day*, adjusted to the needs of the typical patient for whom this food prescription has been written, is shown on page 20.

The foods given here are the same as those used in the series of "Typical Diets and Menus," normal and therapeutic (Part IV).

The patient may vary his meals according to his own desires provided that during the day he utilizes sufficient food to fulfill his body requirements.

Menus are planned (Part IV) with reference to such considerations as the cost and availability of the foods, the patient's tastes and habits, the household equipment and the length of time required for preparation and service. In the illustration on page 20 three menus are given using different foods, but which have approximately the same food value. The first is of low cost, in which variety is necessarily limited; the second is what the moderate income allows; while the third represents greater expense and variety, greater appeal to the aesthetic sense and the expenditure of more time in preparation and service.

RECIPES

Many of the foods allowed in the diet, or their exchanges, may be combined into "made dishes." Recipes will help the patient to adopt new combinations and methods of preparation and to use unaccustomed or unfamiliar foods, enabling him to vary his diet and to utilize all the foods prescribed. Authoritative cook books provide dependable recipes. It is important to know the food value of a

recipe in meeting the requirements of the food prescription (Tables 24, 25).

FORM WITH FOODS FOR THE DAY ARRANGED
IN A MEAL PLAN TO GUIDE THE PATIENT

Meal Plan

Morning

Fruit

Cereal with milk or cream and sugar

Egg, 1

Bread or toast, 2 slices with butter and jelly

Beverage with cream and sugar if desired

Noon

Macaroni, rice or potato, 1 serving

Cheese, egg, or small serving of meat, fish or poultry

Vegetables, 1 serving, cooked or in salad, with butter or mayonnaise

Bread and butter, 2 slices

Fruit, 1 serving, cooked or raw

Milk, 1 glass

Night

Soup, with crackers

Meat, fish or poultry, 1 serving

Potato, rice, or spaghetti, 1 serving

Vegetables, 2 servings, cooked or in salad, with butter or mayonnaise

Bread with butter, 1 slice

Dessert, 1 serving fruit and cake or pudding or pie

Beverage with cream and sugar—if desired

MEANS FOR VARYING THE DIET

It is seen that there are several ways in which the menus may be varied and still fulfill the food prescription (see Tables, Part II):

By the use of different kinds of meat, vegetables, cereals and fruits in the various meals;

By changing the foods from one meal to another,—that is, by varying the type of meals;

By using exchanges,—that is, substituting for foods specified in the diet others of approximately the same food value;

By combining foods allowed, or their exchanges, into "made dishes" through a knowledge of recipes.

TYPICAL MENUS OF APPROXIMATELY THE SAME FOOD VALUE BUT AT DIFFERENT LEVELS OF COST

Low	Moderate	Liberal
<i>Morning Meal</i>	<i>Morning Meal</i>	<i>Morning Meal</i>
Prunes, 5 small	Orange, 1	Orange juice
Oatmeal with milk and sugar	Oatmeal with cream and sugar	Shredded wheat with strawberries and cream
Egg, 1	Egg, 1	Egg, 1
Bread, 2 slices with butter	Bread or Toast with butter and jelly	Muffin with butter and marmalade
Coffee with milk	Coffee with cream and sugar	Coffee with cream and sugar
<i>Noon Meal</i>	<i>Noon Meal</i>	<i>Noon Meal</i>
Macaroni with cheese	Macaroni with cheese	Creamed chicken and mushrooms in macaroni ring
Cole Slaw	Tomato salad with mayonnaise	Stuffed tomato salad with dressing
Bread, 2 slices with butter	Bread, 2 slices with butter	Roll, 2 with butter
Apple	Baked apple with cream	Apple snow with boiled custard
Milk, 1 glass	Milk, 1 glass	Milk, 1 glass

<i>Night Meal</i>	<i>Night Meal</i>	<i>Night Meal</i>
Tomato juice	Bouillon with 2 saltines	Consomme with 2 saltines
Meat Stew	Roast Beef, 1 serving	Sirloin steak
Meat	Baked potato	Parsley potato balls
Potato	Carrots, buttered	Glazed earrots
Carrots	String beans, buttered	Hearts of esearole with Roquefort cheese dress- ing
Onion		Roll, 1 with butter
Bread, 2 slices with butter	Bread, 1 slice with butter	Fruit ice
Banana	Fruit gelatin with cream	Cup eake
Gingerbread	Plain eake	Coffee, if desired
	Coffee, if desired	

SUMMARY: STEPS IN THE CONSTRUCTION
OF THE NORMAL DIET BASED UPON THE
FOOD PRESCRIPTION (PART I, CHAPTER
1, P. 6)

Select food in terms of—

- Foods that are the principal sources
of the food constituents
- The usual food intake of the patient
- The foods that are included in the
protective diet
- Environmental factors that influence
the effectiveness of the diet.

Compute the amounts of the food
constituents supplied by these
foods with reference to the require-
ments of the food prescription:

Protein, fat, carbohydrate

Minerals—calcium, phosphorus, iron

Vitamins—Vitamin A, Thiamine, Ri-
boflavin, Niacin, Ascorbic Acid

Calculate the total calories.

Give the patient directions for food
for the day, with lists of ex-
changes, recipes, a meal plan
and menus.

CHAPTER 3

THE CONSTRUCTION OF THE THERAPEUTIC DIET

The purpose of the therapeutic diet in medical treatment is to help as much as possible in maintaining the normal function of diseased tissue, in restoring normal activity when that is impaired, in compensating for a loss of function, or in preventing further tissue damage.

BASIS OF THE THERAPEUTIC DIET

The *principles that govern the normal diet* are also the basis of the therapeutic diet. The factors of height, age, sex, average body weight and activity, as well as environmental factors, must be considered. The standards with respect to the amounts of the food constituents required for normal body needs and the foods that are the principal sources of these food constituents must be kept in mind.

When the *physiology and pathology of the body part affected* and the relation of the body part to food are known (Part III, Dietary Outlines), the guiding principles in the practice of diet therapy as a part of medical treatment are clearly indicated. The *findings of the medical examination and laboratory tests* that are significant in diet therapy (Table 57) must also be evaluated, not only for purposes related to fulfillment of the food prescription but also for checking the effectiveness of dietetic treatment.

Dietetic treatment will be modified in accordance with new facts established by investigations in the fields of medicine and allied sciences.

Environmental factors must be given careful consideration, as in the normal diet, since good habits of hygiene, mental

as well as physical, are essential to the effectiveness of the diet (Chapter 4).

The *modification of the normal diet* planned to meet the special needs of the therapeutic diet must be based on an understanding of the nature of the disease and of the condition of the individual patient, and the amounts of the various food constituents must be computed with reference to the increase or decrease that the food prescription may require. Frequently, certain foods must be given in larger or smaller quantities than those which the patient is accustomed to taking. When the patient is too ill to take the necessary food for a considerable period, he will begin to suffer from the deficiencies of his diet as well as from his disease. When certain foods have to be omitted, and no other foods can be substituted for them, medication must be prescribed by the physician. It may often be necessary to change the consistency of a food or the method of preparation in order to include it in the diet. There may need to be a rearrangement of the number and frequency of the meals and feedings.

In order to help the patient to carry out his diet or to understand it better, he is given a list of "Food for the Day" with food exchanges and recipes using the foods allowed in the diet. The exchanges are adapted to the particular dietetic requirements of the patient and, whenever possible, to his individual tastes and preferences.

When further guidance is indicated or desired, a "Meal Plan for the Day," which utilizes all the foods included in the diet, is outlined for the patient and adjusted to his environment.

THE EDUCATION OF THE PATIENT

With each disease certain characteristic points, varying with different diseases, will need particular emphasis. In teaching the patient it should be known, furthermore, in what ways and to what extent he needs special guidance and service. The material given the patient to help him in carrying out the dietetic treatment must be so clearly presented that he will readily understand and follow it (Part I, Chapter 6).

PRINCIPLES UNDERLYING VARIOUS
THERAPEUTIC DIETS

Salient points in the application of the foregoing factors to the construction of the therapeutic diet, with reference to certain diseases, will be dealt with here, and again in a series of Dietary Outlines (Part III).

In **food allergy**, the foods that are found to be causes of symptoms or predisposing factors are omitted, but the food constituents must be provided in normal amounts by food or by medication. Diets vary according to the theory and practice of the physician.

Diets which are based solely on the omission of foods for which the patient shows a positive skin reaction are often ineffective because skin tests are unreliable in the demonstration of clinical food allergy. A negative skin test does not necessarily mean the absence of allergy, nor does a positive test indicate with certainty that a particular food is the cause of symptoms.

On the *restricted diet*, so named, physicians list for their patients, without tests, certain kinds of foods to be avoided, because it is believed that they tend to intensify symptoms or produce unfavorable reactions. In general, these are foods that are not easily digested or that

affect the digestive tract unfavorably (p. 193), such as very cold foods and drinks, and beer; cocoa, chocolate and concentrated sweets—candy, jams and jellies; condiments, spices and richly spiced foods; fried foods, pastries and hot breads; various kinds of fish, especially shell fish; meats—turkey, veal, pork, ham, bacon and liver; vegetables and fruits that are high in cellulose and form gas, and nuts that cause irritation to the throat and coughing.

The *elimination diet* (Table 59) is another means of determining the foods to which the patient is allergic. This diet is free from milk, eggs and wheat. Other foods are tried out, one after another, for a period, in a succession of diets, until the offending food is identified. The results obtained from certain well-known routine elimination diets have proved satisfactory to the originators of these diets and to others. This method may be adapted by various physicians who desire special elimination diets to meet the needs of their own practice.

Foods belonging to the same biological group (Table 58) as the food causing an allergic response are sometimes omitted, even though they themselves show no reaction, when the physician believes that their family relationship is sufficient reason to regard any one of them as a possible cause of symptoms. Lists are available in which both plants and animals are arranged according to their biological groups. Some physicians may allow these foods but watch closely for any symptoms which may occur as the result of their presence in the diet.

Sometimes it is difficult to provide an adequate diet if many or important foods are prohibited. It is possible, however, to avoid a deficiency in the diet by giving larger amounts of the foods allowed than the normal diet supplies, or by prescribing

medication when minerals and vitamins are lacking.

Food for the day should be so distributed that there will be no excess at any one meal. It is advisable, especially for children, to have the main meal at noon time. If the adult patient desires extra food at bedtime, it should be of a kind that is easily digested and allowed in his diet.

Symptoms are often caused or intensified by factors other than food that the various tests may not identify (Part III, Dietary Outlines). Therefore, in addition to the physical examination and various tests, a careful history of the patient's environment is essential to the plan and the success of treatment. With an outline such as the Nutritional History (Part I, Chapter 2) as a basis, a careful search is made for causative or predisposing factors outside and inside the home (Part III, Dietary Outlines).

It is most important that the patient should understand the principles underlying these procedures in dietetic treatment, that he may coöperate intelligently and in fullest measure (Part I, Chapter 6).

In **atonic constipation**, there is lack of muscle tone of the intestine. The food constituents remain normal, and the amounts and kinds of foods are the same as in the normal diet, the bulk and roughage of which are often adequate for this condition (See Foreword to Tables, p. 79). A liberal fluid intake of at least the normal amount (six to eight glasses daily) is stressed (Parts III, Dietary Outlines and IV, Diets).

In **spastic constipation**, there is an irritability of the intestine resulting in spasm, or alternating spasm and atony. Here again, the amounts of the food constituents remain normal. Because of the sensitivity of the colon to stimulation, however, a bland diet, which is smooth

and non-irritating, is advised. The meals may follow the usual routine of the patient (Parts III, Dietary Outlines and IV, Diets).

In both conditions of constipation, regular habits of bowel elimination adjusted to the daily routine of the patient, should be established to help make the dietetic treatment effective (p. 39).

In **simple and mucous colitis**, increased irritability of the colon results in diarrhea, flatulence and abdominal discomfort. Inflammation of the mucosa may be present, but there is no ulceration. As in all cases of increased intestinal irritability, a diet low in residue, smooth and non-irritating, is advisable. The amounts of food constituents remain normal, but special attention must be given to the consistency of foods chosen. Dietary treatment follows very closely the regime outlined for ulcerative colitis (See below).

In **ulcerative colitis**, the body part affected is the large intestine, where inflammation and ulceration of the mucosa are present. While the etiology of this condition is not known, several possible causes have been suggested, such as infection, psychogenic factors, and nutritional deficiency. Attacks of acute ulcerative colitis are extremely debilitating, and exudation and hemorrhage from the ulcerated areas cause an increased loss of protein in the feces. For these reasons, and because the patient is ordinarily malnourished, a high caloric, high protein, high vitamin diet is needed if the patient is to be restored to a state of optimal nutrition. The diet should be bland, non-irritating and non-stimulating. Foods which contain protein of high biological value, such as finely chopped beef and tender cuts of meat, should be included as early as possible. When the patient is too ill to take protein

foods in adequate quantity, supplementary medication in the form of protein hydrolysates may be of value. Opinion is divided concerning the use of milk in the diet. Many physicians believe that milk is not well tolerated while others have found that milk may be used in liberal quantity provided that it is boiled or evaporated. Several small meals are often better tolerated than three large meals (Parts III, Dietary Outlines and IV, Diets).

In **peptic ulcer**, the body part chiefly affected is the mucosa of the stomach or duodenum, which is ulcerated to varying depths. The muscular tissue and even peritoneal covering may be involved. In addition, there is often hypermotility. Free hydrochloric acid may be present in excess in duodenal ulcer, but may be absent in gastric ulcer. The aim of dietetic treatment is to avoid irritation of the ulcer, to allow the stomach to rest as much as possible and to neutralize high acid, when it is present.

Again, the procedure will be to consider the modification of the food constituents, a change in the type and consistency of the food and a rearrangement of feedings that will bring about the result desired from treatment. The normal function of the stomach is to soften and break the food. For the ulcer diet, this softening and breaking is done in the preparation of the food. To lighten the work of the stomach, and to lessen irritation, a smooth or bland diet is used.

It is generally agreed that fat diminishes gastric acidity by depressing the secretion of hydrochloric acid. For this reason, it is desirable to increase the fat content of the diet. Many authorities also advise that the protein content be increased, both for its neutralizing effect on gastric acidity and for its aid in the repair of damaged tissue. The amounts

of carbohydrate remain normal, but some of the foods used as sources of carbohydrate and protein must be excluded or modified.

The foods given must not be irritating—chemically, mechanically, or thermally. Some of the carbohydrate foods—whole grain cereals, vegetables, and fruits—contain varying amounts of cellulose, which is irritating to the ulcer and must be softened as much as possible or removed by cooking and straining. Enriched white bread and very finely ground whole grain or enriched cereals should be used in preference to the coarser products. Because concentrated sweets may ferment and produce gas, they should be given only in very small amounts. Certain of the protein foods which contain fiber, such as meat, fish, and poultry, should be avoided in the early stages of the diet. Meat extractives, in the form of soups, gravies, and highly seasoned chowders, stimulate the flow of hydrochloric acid and should be omitted until the patient is convalescent. The administration of amino acids in the form of protein hydrolysates is a recent innovation in the treatment of peptic ulcer. Protein hydrolysates are an easily assimilated, non-irritating source of pure protein. When they are prescribed by the physician, they may be stirred into milk, or served in breads, sandwich spreads, desserts or cereals.

Other causes of irritation are the acid-tasting foods, condiments, spices, coffee, tea, cocoa, very hot or cold foods and fried foods. Orange juice, grapefruit juice and tomato juice, although acid-tasting foods, should be given as soon as possible for their ascorbic acid content. If diluted or given after other foods, they may be tolerated very early in the treatment. The use of alcohol and tobacco is usually strictly prohibited

as nicotine and alcohol stimulate the flow of gastric juice. Alcohol is also irritating to the gastric mucosa.

The meals should be small in amount, with regular feedings between meals so that some food will be present in the stomach at all times to help neutralize free acid and to prevent it from irritating the ulcer. Because of the accumulation of gastric secretion during the night, it is sometimes recommended that the patient be awakened for night feedings, particularly when the ulcer is in the acute stage. Milk combines readily with hydrochloric acid and, if given regularly at frequent intervals, helps to lessen the irritation. Not only must there be conditions for physical rest, but, in the treatment of the ulcer patient, special attention must be given to causes of emotional disturbances and nervous tension. Control of environmental and nervous factors is of great importance in the treatment of peptic ulcer.

The recent trend in the treatment of gastric or duodenal hemorrhage is to start oral feedings as soon as shock, nausea, and vomiting have been brought under control. Early feedings reduce gastric motility, promote more rapid healing, and increase the rate of blood regeneration. In general, the dietary principles of the ulcer regime may be followed, with cautious progression of feedings according to the condition of the patient (p. 204). There are some who use Meulengracht's method of feeding patients generously during the period of bleeding. A few authorities, however, still give nothing by mouth until bleeding has stopped.

In **gastritis** the treatment parallels the treatment of ulcer.

In **underweight**, there is a need of food in excess of normal body requirements, to provide for storage of adipose tissue.

Therefore, larger amounts of carbohydrate and fat are given, to increase the caloric value of the intake. There must also be sufficient thiamine to help metabolize the carbohydrate, and to stimulate the appetite for the required amount of food. It is important to find the cause of the underweight,—whether it is due to insufficient amounts of the food constituents and of the kinds of foods to supply them, to poor utilization of the food eaten, or to emotional or endocrine factors. The treatment of these conditions is necessary for the effectiveness of the diet. Care should be taken to choose as sources of the food constituents foods which are most acceptable to the patient, to encourage him to take the desired amounts. Too much bulk is not desirable because it gives a feeling of satiety. Sources of concentrated carbohydrate and fat, such as sugar, cream and butter, are used, but these must be given carefully because they cloy the appetite if taken in too large amounts (Parts III, Dietary Outlines and IV, Diets).

In order that sufficient amounts of food shall be taken, it is frequently desirable to give intermediate feedings; but if this destroys the appetite for the regular meals they should be omitted and the necessary amount of food for the day taken in the regular meals.

In **obesity**, there is an excess storage of adipose tissue. Here again it is essential to learn the cause, emotional or pathological, underlying the condition. It is evident that the procedure in dietetic treatment is to reduce the amount of the food constituents, carbohydrate and fat, thereby decreasing the caloric value of the intake. The protein remains normal. Although the amount of food is limited, the foods chosen should supply minerals and vitamins sufficient for the protection of health, and provide sufficient bulk to

give a feeling of satisfaction (Parts III Dietary Outlines and IV, Diets).

In **diabetes**, the body part affected is known to be the Islands of Langerhans of the pancreas, the dysfunction of which results in an absolute or relative deficiency of insulin. Insulin is the internal secretion of the pancreas which is essential for proper carbohydrate metabolism. By facilitating the utilization of carbohydrate by the tissues and by maintaining carbohydrate stores in the liver, insulin regulates blood sugar levels. The inter-relationship between the secretions of other endocrine glands and the pancreas should be given consideration in the treatment of diabetes. It has been found that pituitary, thyroid and adrenal hormones have a diabetogenic action which antagonizes the action of insulin. When these other hormones are present in excess, an increased amount of insulin is needed for carbohydrate metabolism.

It has been found through animal experimentation that starvation, a high fat diet and insulin may prevent damage to the Islands of Langerhans or reverse pathological changes once they have occurred.

From the above evidence, many authorities believe that diets low in carbohydrate and containing sufficient fat (usually within the normal range) to supply the desired caloric requirement should be prescribed. Insulin should be administered if necessary early in the treatment of the disease in sufficient quantity to metabolize the carbohydrate prescribed in the diet. A few authorities, however, reason that more liberal amounts of carbohydrate (high normal) should be given since carbohydrate stimulates pancreatic activity.

New discoveries and changing viewpoints have influenced the type of diet advocated for the diabetic, and there

are many types of diets according to the belief of various authorities. Insulin should be given if necessary to ensure the metabolism of the amount of carbohydrate needed by the body and to keep the blood sugar levels within limits of safety, with little or no sugar in the urine. With insulin, the diabetic diet contains approximately one half the carbohydrate of the average normal diet. Protein and fat are usually normal (Table 62). The caloric value of the intake thus provided is satisfactory since it is desirable for the diabetic to stay within or slightly below his average normal weight. It has also been shown that if the caloric value of the intake is below the normal requirement over a period of time, the basal metabolic rate will be lowered, thereby decreasing the actual requirement of food. When the patient is markedly underweight, carbohydrate may be low normal and fat high normal.

Meals may follow the customary routine of the patient, but carbohydrate should be distributed evenly throughout the day's diet to prevent wide fluctuations in the blood sugar level. Carbohydrate may be divided equally between the three meals for patients not taking insulin. Patients receiving protamine zinc insulin should have, in addition to the three meals spaced from five to six hours apart, a small bedtime feeding to prevent the possibility of having an insulin reaction during the night. When globin insulin is used, a mid-afternoon feeding is advisable. Fractional urinalyses will indicate the necessary adjustment in the distribution of carbohydrate throughout the day.

The theory has been advanced that a high blood cholesterol, which often accompanies uncontrolled diabetes, is a predisposing factor in the development of arteriosclerosis. When blood cholesterol

remains high in spite of good control of the diabetes, a diet restricted in animal fat is often recommended. When both carbohydrate and fat are decreased in the diet, the minerals may remain normal, but it is almost impossible to satisfy the standard vitamin requirements without medication.

For normal growth and development, diabetic children require a normal diet with sufficient insulin to utilize it. Concentrated sweets are omitted.

In **liver disease**, it must be remembered that every kind of food ingested demands activity on the part of the liver. Dietetic treatment in both acute and chronic disorders is essentially the same. In general, the diet is high in carbohydrate, protein, vitamins and calories, and should be bland, non-irritating and non-stimulating.

It has been found that carbohydrate, by increasing the glycogen stores, and protein, by providing essential substances which prohibit excessive fat deposition in the liver, not only aid liver cell regeneration but also protect the liver against further damage. A high protein intake, however, also imposes a heavy metabolic load. The liver must perform work in the deamination of amino acids, with the formation of ammonium carbonate and urea. It is to be hoped that future research will reveal the nature of the unknown essentials now provided in food protein. When more is known, it may be possible to give less protein plus the essential substances which are at present unidentified.

The fat content of the diet depends on the patient's ability to tolerate this food constituent. If the patient is able to take fat without discomfort, it may be allowed in low normal quantity. Most patients with liver disease, particularly with acute hepatitis and diseases of the

biliary tract which interfere with the flow of bile into the intestine, do not tolerate fat well; in these cases, fat may need to be reduced below normal. Methionine, one of the essential amino acids, and choline are sometimes given as supplementary medication because they inhibit fatty infiltration of the liver.

The patient with liver disease, particularly in the acute stages, is often unable to eat the amount of food prescribed because of poor appetite or gastrointestinal disturbance. It is wise to start dietetic treatment with amounts of food constituents suited to the patient's tolerance, gradually increasing the quantity of food until the patient is taking the prescribed amount. Every effort must be made to serve well-cooked, attractively prepared food so as to stimulate appetite.

Thiamine, niacin, and riboflavin, especially, seem to have a protective action for the liver and should be given in increased amounts. Medication will often be necessary.

When liver disease is complicated by ascites or edema, dietary sodium should be restricted. For a detailed discussion of the low sodium diet, see the dietary outline for cardiovascular disease (Part III, Dietary Outlines).

Some authorities recommend the exclusive use of foods from plant sources and the omission of all foods high in cholesterol (Table 56) when hypercholesterolemia accompanies liver disease. Drastic restriction is often necessary, however, before any effect on the blood cholesterol is apparent, and such a diet must be supplemented by vitamins and minerals.

Alcohol is prohibited by clinicians, and coffee and tea are allowed only in moderate amounts.

Meals may follow the customary routine of the patient, but intermediate

feedings, usually of fruit juices or other foods allowed in the diet, are often necessary to help fulfill the high carbohydrate and protein requirements.

In **gall bladder disease**, the diet usually given is low in fat (Table 33) and contains normal or increased carbohydrate and normal amounts of protein, minerals and vitamins. The fat content of the diet may be adjusted to the tolerance of the patient and the severity of gall bladder dysfunction. Some patients will require less fat restriction than others. Satisfactory results may be obtained in some cases with a low normal fat allowance provided that the fats are carefully selected. Uncooked fats, such as butter, cream, cheese and eggs are preferable because they are more easily digested, but fried foods and pastries are not permitted. Restriction of fat below 1 gram per kilogram of average body weight may be necessary in more severe cases. All foods should be bland and easily digested. Condiments and high residue are contraindicated to avoid distention and increased peristaltic action of the intestines (See Part III, Peptic Ulcer). Small meals given at frequent intervals may be better tolerated than three large meals.

In **nephritis**, the aim of diet therapy is to reduce the metabolic load on the kidneys and to compensate for dysfunction as much as is possible. The protein content of the diet varies with the type of nephritis but, in general, should not exceed the normal plus the amount that is lost in the urine. In acute nephritis and in chronic nephritis with renal function impairment, protein is reduced below normal to the minimal amount necessary to achieve nitrogen balance. In the nephrotic type of nephritis, a high protein diet is sometimes necessary to compensate for the loss of large amounts of protein

in the urine. Carbohydrate is increased when protein is restricted because of its protein-sparing action. Although fat similarly spares protein, it is less effective than carbohydrate in this regard and is therefore usually prescribed in normal quantity. When edema is present, sodium chloride and other sodium salts are markedly reduced in the diet (See Cardiovascular Disease, p. 214). Patients with renal failure (uremia) who are placed on low sodium diets for the control of edema must be followed very carefully because they develop sodium and chloride deficiency more readily than do patients with good kidney function. In the absence of uremia, a diet yielding an acid or neutral ash may be used in edematous patients to increase the excretion of sodium in the urine. In uremia, however, there is a decrease in the alkaline reserve of the body, and a diet yielding an alkaline ash is indicated.

Since the nutritional state of patients with nephritis is often poor, vitamins should be increased above normal. Meals may follow the patient's customary routine, although frequent small feedings may be better tolerated when there is nausea or vomiting (See Part III, Dietary Outlines).

In **pregnancy**, care must be taken to provide minerals and vitamins in adequate amounts, and the content of the normal diet is increased in respect to these food constituents. If the food does not provide them in sufficient amounts, medication should be given. The importance of an adequate protein intake during pregnancy should be stressed. The growth of the fetus, increased metabolism on the part of the mother, growth of maternal tissues, and the hormonal preparation for lactation require that the protein intake be at least at high normal levels (1.5 grams per

kilogram) during the latter half of pregnancy. It has been shown that faulty nutrition during pregnancy often precedes, and therefore may be the cause of, many of the complications of pregnancy. Inadequate quantities of protein may predispose to toxemia of pregnancy, poor tone of the uterine musculature, lowered resistance to infection, scanty lactation and anemia. During the last months of pregnancy, it is usual to increase the caloric content of the diet, but when there is excessive gain in weight, the total caloric intake may have to be restricted. One of the most important principles in the prophylaxis of toxemia of pregnancy is the prevention and prompt treatment of excessive weight gain.

In toxemia of pregnancy, the diet should be adjusted to the condition of the patient. Early in the course of treatment, a very low caloric intake and a liquid diet may be prescribed for a short period of time. After the initial period of observation, and according to the tolerance of the patient, the food constituents may be included as in the normal pregnancy except for sodium, which is markedly reduced in the presence of edema, latent or apparent. Protein need not be restricted, since the loss of large quantities of protein in the urine and, occasionally, a fall in plasma proteins, point toward a greater rather than a diminished need for protein. When there is primary or pre-existing kidney disease, however, the protein intake should be adjusted according to the type of renal involvement (See nephritis).

In the treatment of pernicious vomiting of pregnancy, carbohydrate is increased to provide a glycogen reserve, and fat, which is usually not well tolerated, is decreased. Small, frequent feedings of dry food with little or no fluids are usually better tolerated in this condition.

During lactation, even greater increases above the normal in calories, protein, minerals (especially calcium) and vitamins are required (See Part III, Dietary Outlines).

In **cardiovascular disease**, it is evident that the main purpose of the diet is to reduce the strain on the heart. In the absence of cardiac failure, the diet differs very little from the normal. If the patient is obese, carbohydrate and fat should be decreased to below maintenance levels until he is slightly below normal weight. Some physicians recommend that patients at normal weight reduce to levels slightly below the normal. When the caloric intake is low, basal metabolism is reduced, and less cardiac activity is required. The patient should avoid heavy meals and foods which are known to cause gastrointestinal distress.

These principles are doubly important when cardiac failure occurs. In the presence of heart failure there is evidence to indicate that a rapid reduction (in two or three weeks) in weight of approximately 10 per cent from a normal or underweight level, exclusive of edema fluid, is accompanied by considerable improvement in the functional state of the vascular system. When the lower weight level is reached, a diet which maintains the weight likewise maintains the beneficial effects on the cardiovascular state for at least several months.

Congestive heart failure alters the balance between the fluid within the blood vessels and that in the intercellular tissue spaces. Water and salt are retained in the tissues and cause the formation of edema. In some cases, edema may be latent, manifest only by a gain in body weight which cannot be explained by an increased caloric intake. In the treatment of edema, whatever the underlying disease, the problem is that of freeing the fluid which has accumulated in the extra-

cellular tissue spaces. The excess water can be retained only as a physiologic solution of certain inorganic salts, the most important of which is sodium chloride. When the available supply of sodium is markedly reduced, the body tends to excrete the extra water, and the edema begins to disappear. This effect can be achieved by placing the patient on a low sodium diet (Page 264). It should be emphasized that the important element is sodium; although sodium occurs most commonly as sodium chloride (ordinary table salt), all other sodium salts, such as sodium bicarbonate, must be avoided. The normal diet contains between 6 and 15 grams of sodium chloride per day. In the treatment of congestive heart failure, the best results are obtained by reducing the sodium intake to between 200 and 800 milligrams (equivalent to 0.5 to 2.01 grams of sodium chloride). To maintain the intake at these low levels, it is necessary to select foods which are naturally low in sodium (Table 46) as well as to omit table salt from the preparation of foods. It is further recommended that the diet be neutral or contain a preponderance of acid ash (Tables 52-54) since, under these circumstances, the loss of sodium in the urine is increased. In some cases, it is necessary to administer acid salts in order to enhance this effect. Fluids need not be restricted as long as the sodium intake is kept very low, and some authorities believe that fluids in liberal amounts are beneficial.

The number of meals may follow the customary routine of the patient, although small meals are sometimes given to prevent postprandial distress. Frequently, five small meals are better tolerated than three large meals a day.

In the treatment of **hypertension**, with or without cardiac failure, there is considerable difference of opinion regarding

diet therapy, but investigations carried out over the past few years have renewed interest and hope in this field. Some striking results have been reported by Kempner with the "rice diet."^{1, 2} This diet consists solely of rice, fruits, and fruit juices, and contains about 460 grams of carbohydrate, 20 grams of protein and 5 grams of fat, 0.2 gram of sodium and 0.15 gram of chloride. However, considerably lower sodium figures for this diet are obtained by using the sodium values recently published by the Research Laboratory of Mead Johnson and Company (Table 22). The rice is boiled or steamed in plain water or fruit juices (no salt, milk or fats are used). Fruits, (fresh, frozen or preserved), fruit juices (no tomato or vegetable juices), and white sugar may be used liberally, and brown sugar in limited amounts, to make up the total caloric allowance of about 2000 calories. All fruits may be included, with the exception of dates, avocados and dried or canned fruit to which anything other than sugar has been added. Nuts are also excluded. Since the diet is markedly deficient in minerals and vitamins, medication must be prescribed. The high carbohydrate intake, because of its protein-sparing action, makes it possible for the patient to maintain nitrogen balance. When the patient has shown satisfactory improvement, the diet may be modified by the addition of small amounts of non-leguminous vegetables, lean beef, chicken, fish, or eggs, but the strict diet should be resumed whenever there is a recurrence of signs and symptoms.

This diet is still in the experimental stages and results, while good in some

¹ Kempner, W., Compensation of Renal Metabolic Dysfunction. *North Carolina Med. J.* 6: 61-87, 1945.

² Ibid., Treatment of Hypertensive Vascular Disease With the Rice Diet. *Am. J. Medicine*, 4: 545-577, 1948.

eases, have been poor in others. The unpleasantness of the diet should be weighed against the possible results, the condition of the patient and the probable life expectancy.

The physiological reason for the apparent effectiveness of this diet in some cases is not clear. Some experimental and clinical studies have suggested that the effect is due to the marked restriction of sodium,³ and some recommend a simple low sodium diet in the treatment of hypertension (See Outline for Cardiovascular Disease with Congestive Heart Failure, Part III, Dietary Outlines).

All patients on a restricted sodium chloride intake must be watched carefully for evidence of sodium and chloride depletion since such depletion may result in death if not corrected promptly. The ordinary hypertensive patient compensates readily for restriction of dietary sodium, but the patient with renal impairment often does not tolerate it well and is apt to develop severe sodium and chloride deficiency. Low sodium diets are contraindicated when renal function is reduced unless facilities for frequent checks of blood and urine chemistry are available.

The possibility that dietary cholesterol may contribute to the progression of human arteriosclerosis has lead to the suggestion by some workers that patients with arteriosclerotic heart disease be placed on a low cholesterol diet. The exact role of cholesterol is not known, although there is increasing evidence that a high blood cholesterol may predispose to more rapid progression of arteriosclerosis. Not all patients with arteriosclerosis, however, have hypercholesterolemia. Furthermore, stringent dietary

restriction is usually necessary before a reduction in blood cholesterol is apparent (See liver disease, p. 28).

In **rickets**, there is a faulty metabolism of calcium and phosphorus due to an incorrect balance between calcium and phosphorus and vitamin D as a result of dietary deficiencies or poor environmental conditions, or both. If the requirement of calcium and phosphorus cannot be supplied by the diet, medication should be prescribed. It is most important that children especially have sufficient fish liver oil to supply the required vitamin D. However, milk can be greatly increased in vitamin D value by various methods. Liberal amounts of vitamin A and ascorbic acid also should be supplied for skeletal development. The diet should contain adequate amounts of the other food constituents (Part III, Dietary Outlines).

For *other diseases* not included in Dietary Outlines, Part III, and for which diet is a part of medical treatment, the construction of the diet can be evolved by consideration of the factors given under the heading "Summary of the Factors in the Construction of the Therapeutic Diet," p. 34. For example:

In **arthritis**, many and varied theories for dietetic treatment have been presented, but as yet none has been generally accepted and therefore it is not discussed here. However, if one wishes to construct a diet on the basis of any one of the theories, the necessary data are available in the Tables.

In **tuberculosis**, the aim in dietetic treatment is to give the patient a diet to maintain the average weight. Earlier methods of treatment called for a high caloric diet, but it is no longer considered desirable to put excess weight on the patient. If the patient is below his average weight, the diet is given in terms of

³ Grollman et al., Sodium Restriction in the Diet for Hypertension. *J. A. M. A.* 129: 533, 1945.

that for underweight. It has been suggested that a high protein diet is indicated in tuberculosis in order to facilitate the repair of diseased tissue. Large amounts of ascorbic acid (up to 1000 milligrams per day) and of vitamin A (up to 100,000 International Units daily) are required to maintain normal blood levels of these substances in tuberculous individuals, although it is not definitely established that the administration of such large quantities alter the course of the disease. These amounts must necessarily be given mainly in the form of supplementary medication. If associated conditions are present they are treated as indicated.

In the treatment of **epilepsy**, the ketogenic diet is now seldom used, having been replaced in most instances by therapy with drugs such as phenobarbital and dilantin. This diet is expensive and difficult to follow. Carbohydrate is reduced to the lowest practical minimum, and fat is greatly increased, which results in an incomplete oxidation of fat, producing ketosis. The protein usually is lower than normal. It is impossible to supply the normal requirements of minerals and vitamins by the foods allowed in the diet, and therefore minerals and vitamins are prescribed as medication. Fillers which have no food value, such as agar jelly and bran wafers, help to give a feeling of fullness and satisfaction and provide a means of utilizing the cream and butter in the diet.

The **anemias** are not discussed here because they are now treated by medication, and a normal diet is given.

In **gout**, the food constituents are given in low normal to normal amounts. If the patient is overweight a low caloric diet is given as in obesity. Foods very high in purines, such as liver and other glandular organs, are omitted. Even foods containing one-third as much purine as these,

such as meat, shell fish, peas and beans, are given moderately. Other vegetables carry small amounts of purine. A table showing the purine content in average serving of various foods facilitates the construction of this diet (Table 55). Alcoholic beverages should be omitted.

Diets classified according to the consistency of their food content include the so-called "clear liquid," "full liquid," "soft" and "light" diets (Table 61).

The *clear liquid diet* provides, for a very short period, limited non-gas-forming nourishment to patients having a serious impairment of the functions of digestion. It should be given at frequent intervals, to relieve thirst, supply the tissues with fluid, aid the eructation of gas and furnish a small amount of carbohydrate to counteract the fasting ketosis. The food content should consist only of liquids that are clear, non-gas-forming, non-residue and sub-acid, supplying water, carbohydrate and a small amount of protein in the most soluble and easily digested forms.

The *full liquid diet* increases the nutritive value of the restricted liquid diet, providing normal amounts of the food constituents. The foods supplied should be those that remain liquid at room or body temperature, contain no fiber and are non-gas-forming. This diet is used only for a limited period.

The *soft diet* progresses to the use of solid foods that are easily digested. It provides normal amounts of the food constituents, but in the choice and preparation of foods as little residue as possible is included, and foods that ferment easily are avoided. Meat, fish and poultry are permitted by some physicians. Meals may follow the patient's usual routine unless the amounts taken at the meal are small, in which case intermediate feedings

are given to provide adequate food to fulfill the body's needs.

The *light* diet is less rigidly restricted in residue. There is a more liberal use of protein foods, the easily digested vegetables and fruits and whole grain breads and cereals. Foods requiring a long period for digestion are avoided.

SUMMARY OF THE FACTORS IN THE CONSTRUCTION OF THE THERAPEUTIC DIET

The Normal Diet as a Basis

Height, age, sex and average body weight

Activity

Food constituents—amounts necessary to fulfill body requirements

The Therapeutic Diet

The specific disease or abnormal condition

The body part affected

Normal physiology in relation to food

Pathological physiology or abnormal condition

Dysfunction in relation to food

Foods to compensate for the dysfunction of the body part affected

Modification of the Normal Diet

Food constituents—increase or decrease in amounts

Foods—increase or decrease in kinds and amounts

Omission of certain foods

Change in the consistency of foods

Change in method of preparation of foods

Meals—rearrangement of number and frequency of meals and feedings

Adaptation of the diet to the tastes and preferences of the individual, as in the normal diet.

Consideration of environmental factors that influence the effectiveness of the diet, as in the normal diet.

CHAPTER 4

ENVIRONMENTAL FACTORS THAT INFLUENCE THE EFFECTIVENESS OF THE DIET—PHYSICAL AND MENTAL

THE SCIENCE OF PLANNING THE DIET

In planning a diet it is always necessary first to consider the body requirements in terms of food. The body requirements and the computation of the kinds and amounts of food necessary to fulfill them have been described in detail (Parts I and II). The use of these data may be called the *science* of planning the diet.

THE ART OF PLANNING THE DIET

But more than science must enter into effective dietetic treatment; for the diet is planned for a human being who cannot be controlled like an animal under experimentation. The influence of personality traits and of a great variety of factors in family and community life must be considered; and the adaptation of the diet to these factors may be called the *art* of planning the diet.

"What is spoken of as a 'clinical' picture is not just a photograph of a man sick in bed; it is an impressionistic painting of the patient surrounded by his home, his work, his relations, his friends, his joys, sorrows, hopes and fears."¹

IDENTIFICATION OF THE PATIENT

To plan a dietetic regime that will be possible of fulfillment in the home environment, it is essential to obtain, from records and from careful study of the patient, a mental picture of him against the background of his habits and attitudes, his desires and his necessities.

¹ Peabody, Francis, *Doctor and Patient*, p. 33, Macmillan Co., 1930.

The information received from the patient on admission to the outpatient department or in the office, and the data on the medical records will be helpful. The patient's name often carries certain implications pertaining to cultural and environmental backgrounds, nationality, and food habits and customs. The home address offers a clue to the nature of the facilities for the purchase, care and preparation of food, as well as to the conditions favorable to proper sleep, recreation and other health habits.

NUTRITIONAL HISTORY

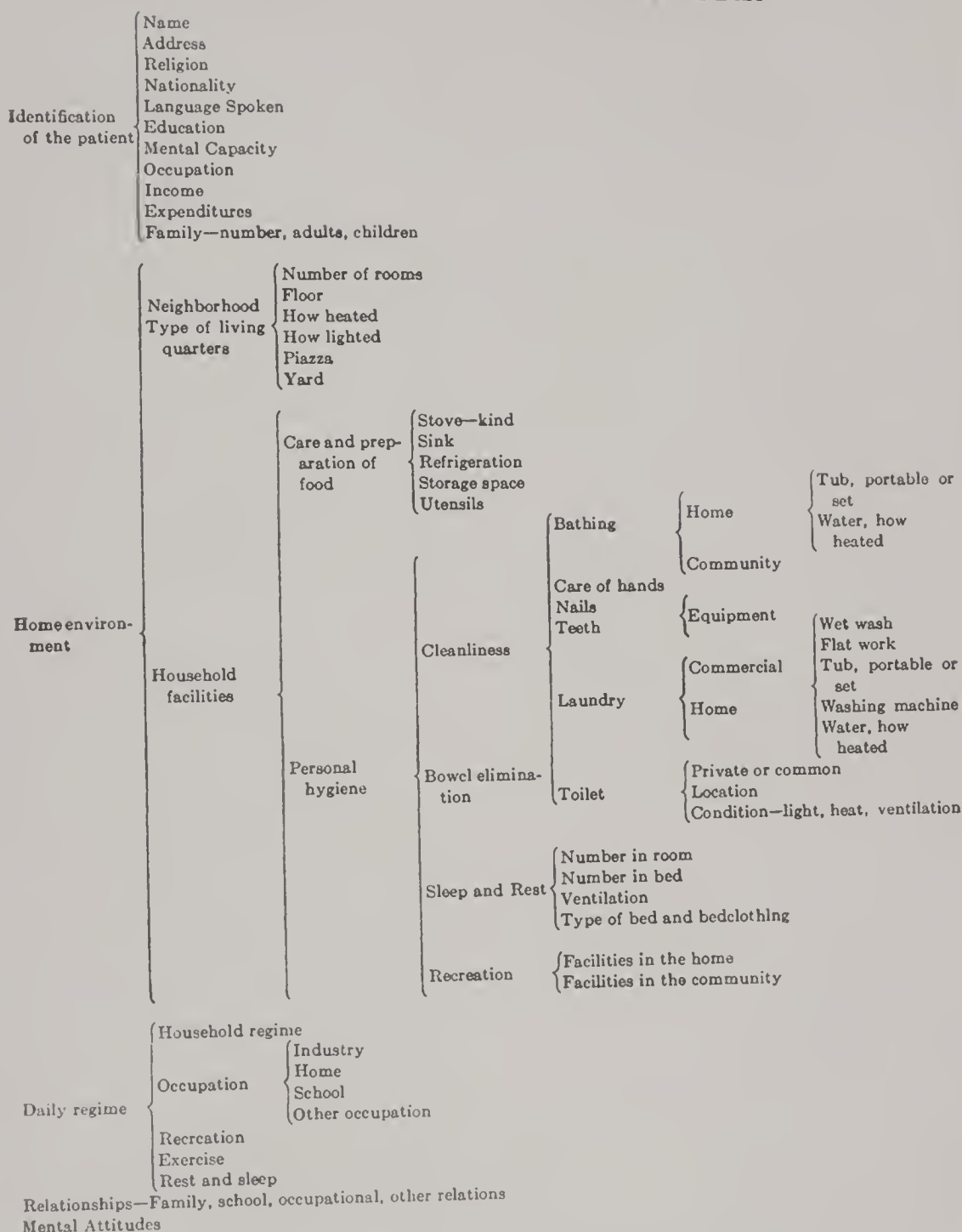
The information obtained from the Nutritional History (Part I, Chapter 2, p. 9) will give much data concerning the physical environment and also concerning the patient's mental and emotional attitudes toward food which influence markedly the pattern of food behavior.

To assist the understanding of the intricate interrelationships of the environmental factors, physical and mental, that may affect the outcome of the diet, the chart on page 36 is given as a basis for study.

INTERRELATIONSHIP OF FOOD AND THE PHYSICAL ENVIRONMENT

Certain of these environmental factors affecting dietary habits will be discussed here, first in terms of their physical aspects. Later it will be shown how these correlate with mental attitudes toward food.

FACTORS OTHER THAN FOOD THAT INFLUENCE THE DIET

*The Income*

The income controls the standard of living to so great an extent, with respect both to body needs and the satisfactions of life, that it must always be given due

consideration in relation to the diet. To judge the adequacy of an income it is necessary, in food treatment as in social treatment, to know the number of people dependent upon it, the basic needs of each

individual and the requirements for fulfilling these needs in accordance with the standards of the individual or family concerned (Part I, Chapter 2).

The necessities of life, such as food, shelter, clothing, and savings, are closely interrelated in their demands upon the income, and it requires definite planning to keep the outlay for them in proper ratio. It is essential in dietetic treatment to be aware of the extent to which these demands, singly or in combination, may prevent the fulfillment of the body's need for sufficient food. Primary needs cannot be satisfied when the income is below the minimum level of the cost of living. Under such conditions, one or more of these needs will inevitably fall below good health standards.

Food is usually the need that first suffers this restriction. It is true that in diets on all levels of income there are only a certain number of food groups from which to choose; but with the lower level income there are definite restrictions with respect to the kinds and amounts of foods within these groups that can be purchased, and the degree to which desires can be satisfied.

The diet planned at the minimum cost must be followed strictly in accordance with the specifications of the expert who plans it. In fact the diet of minimum cost requires able management and it takes a person of initiative and ability to carry it out successfully. One might call it a border line diet, with little margin for safety. The typical diets and menus given in this book (Part IV) are what would be called "liberal," in terms of income, with respect to the amounts and kinds of foods they allow.

Shelter, the home, should supply suitable facilities and equipment for the care and preparation of food, for maintaining good habits of personal hygiene (including

rest and sleep and cleanliness), for recreation, and for satisfying as nearly as possible the desire for wholesome living. The location of the home becomes a factor in relation to income when it entails outlay for lunches and transportation. With the low income, these expenses limit further the money that can be spent to fulfill food requirements. The paragraphs "Food Within the Home" and "Food Outside the Home" (p. 38) consider further the interrelationship of food and shelter.

Clothing can be considered as the shelter or covering of the body, as the home shelters the family or individual, and thus it affects the physical health. The type of clothing needed varies with the age, sex, size, occupation and activity of the individual, as well as with climatic conditions. Again, the standard that is maintained with respect to health and taste in the matter of clothing influences the expenditure of the income sometimes to the neglect of food. But as "food is more nearly a fixed requirement," it is truly stated by one writer that the less the worker earns the greater the proportion of his income that must be spent for food, to the renouncement of all other desires. On the low income, it is difficult to obtain food for caloric requirements and, in cold weather, sufficient coverings to maintain needful body heat.

Savings give a sense of security, which is desirable. However, it is not desirable to set aside anything under the heading of savings or insurance if by so doing the necessities of life such as food, shelter and clothing fall below the standards of good health.

Nationality

Nationality, racial traditions and age-old practices affecting the choice and preparation of food play a large part in

determining the eating habits of the family and the individual. To the foreign born facing new and unaccustomed conditions on every hand, not the least difficult problem is that of obtaining sufficient and acceptable food. While many of their native foods can be procured in this country, and can be prepared and served in customary ways, on the other hand subtle but definite influences lead the foreign born gradually to adopt some of the food habits of the new environment. The younger generation, entering the life of the community through school and work, brings back into the home the habits and customs of neighbors and mates, and the family food habits become a fusion of those of the native country with those of the adopted country. All too frequently this makes for an inadequate diet. This is true especially of those who come to live in cities from villages and farm districts where they have always produced much of their own food. Many of these people are to be found in the low income group in this country. With the unwonted demands on their limited funds they naturally turn to the foods that are the cheapest and most filling—the cereal group—with the result that foods are not purchased in proper kinds and amounts for body needs (Tables 2 and 4).

Food Within the Home

A lack of knowledge of ways of purchasing, storing, and preparing food, as well as of food values, conditions the feeding of the family. The ability of the homemaker to choose foods that are economical and yet meet the body needs, and to prepare them in an appetizing manner even with poor facilities, is a most influential factor in the cultivation of good food habits. The cost of fuel, the type and condition of the stove, and the number and kinds of cooking utensils that the

family possesses may limit the number of foods that can be prepared at the same meal, as well as the methods of preparation. The means for refrigeration and for storage are other factors in determining the selection, conservation, and preparation of food. If sufficient money is not available, or if the wage earner and not the homemaker controls the purse and the purchase of food, or if there is not storage space, the homemaker cannot take advantage of sales, or practice the economy of buying in large quantities. Sometimes there is no place in the neighborhood where the housewife can buy the desired food economically, while buying in the more distant markets involves the expense of transportation and the carrying of burdensome amounts. Often medical treatment requires that the homemaker shall shop under conditions that will entail least physical strain.

Food Outside the Home

Some members of the family—as the child at school or the adult at work—must frequently eat away from the home. The adequacy of the meal that is carried from the home will again depend largely upon the ability of the homemaker to choose and prepare proper and appetizing food. Perhaps the meal is eaten in the restaurant and the responsibility will lie upon the individual himself to select food with special thought for the fulfillment of body needs. The greater expense for meals eaten in the restaurant makes a wise choice of food difficult especially if the cost must be kept at the minimum; and the difficulty is more serious when the individual must eat all of his meals in the restaurant, and becomes complicated indeed when the choice of food must be governed by the requirements of the therapeutic diet.

Even when food is provided in kinds

and amounts necessary to fulfill body needs, it cannot serve its purpose successfully unless habits of good personal hygiene are established by the patient to keep the body in fit physical condition.

Sleep and Rest

The quality of sleep and rest is greatly dependent upon the type of the home environment and the regime of the individual and the family. To ensure restful sleep there should be proper sleeping conditions,—comfortable beds with no crowding, clean and suitable bedclothing, proper temperature and ventilation, and the sleeping quarters so arranged that any member of the family who might need or wish to rest during the day or to retire early could do so without being disturbed.

Rest reduces the energy requirement of the body. It is an important factor, therefore, in the dietetic treatment of the underweight. Fatigue induced by over-activity, or lack of proper sleep and rest, may affect the appetite so unfavorably that the food intake will be insufficient for body needs.

Body Cleanliness

While the relation between body cleanliness and food for body needs may seem slight, yet in our modern culture, cleanliness of teeth, hands and nails is associated with food habits. Principles of sanitation and of preventive medicine are also here involved, with their inferences with respect to the relation between cleanliness and communicable disease. To meet the needs of cleanliness as a sanitary measure, adequate facilities should be available in the home, the school, in industry, and in the community at large. The school and community often assume the responsibility of supplying facilities lacking under poor

housing conditions, as in the case of the public bath.

Laundry

The cost of supplies for both body cleanliness and laundry must be accounted a definite charge against the income, and estimated in balancing expenditures. Here again care must be taken lest the money necessary for food be encroached upon.

Adequate equipment and materials for laundry or "clean clothes" will also depend largely on the type of shelter or home. Facilities will range from the portable tub and no running water, demanding a heavy output of energy, to the modern set tub with running water, and even the automatic washing machine and instantaneous hot water. These details greatly influence the demands on the energy of the homemaker.

Bowel Elimination

Proper habits of bowel elimination are related not only to the kinds and amounts of the food and the fluid intake but also to such factors as the daily regime and the toilet facilities available in the home and the school or the place of occupation. The toilet that is poorly ventilated, badly lighted, ill heated, in an unfavorable location and inadequate for the number using it, is not conducive to good habits; nor are the hurried breakfast, the morning rush, or conditions and regulations often met in the day's occupation. The factor of time is important. Establishing the habit of a regular bowel movement requires that sufficient time be allowed for it definitely at a period in the day's regime when there need be no feeling of haste.

The Occupation and the Daily Regime

The hours of work, whether at school, or in the home, or in industry, will affect

the diet by determining the times for meals, as well as the hours of sleep and the amount of leisure for recreation and other activities. If the hours that a member of the family must follow, with respect to meal time, do not coincide with those of the rest of the household, some adjustment must be made in the home to guard against forming faulty food habits. In school or industry, the facilities that exist for eating,—such as a dining room or equipment for heating food brought from home,—and the amount of time allowed, are factors in determining the type of lunch the individual will have, where and how much he will eat, and how rapidly and with what satisfaction. For the patient on a therapeutic diet these problems are accentuated, and it is necessary to plan carefully for the meals eaten away from home. The degree of activity that the occupation requires will determine the energy requirement, which must be fulfilled by food.

Recreation

Physical fitness for play depends largely upon a proper food intake. The desire for food is dependent in part upon a sense of well being, which in turn is influenced by the maintenance of a proper balance between activity and rest. Recreation should be advantageous to health, stimulating the desire for food; but when it leads to overexcitability or overactivity, it is harmful. Fatigue from such causes must be avoided, especially in the child, lest it affect the appetite and the body's utilization of food. Further, there must be a proper balance between the physical activities of recreation and the food intake to maintain average body weight. Food taken in larger amounts than are required for the body's activities will lead to overweight; while activity with

less food than the body requires leads to underweight.

INTERRELATIONSHIP OF FOOD AND MENTAL ATTITUDES

Various environmental factors have been discussed in terms of the physical aspects of their relation to food. But the "impressionistic painting" which Dr. Peabody has urged involves also an understanding of the patient in terms of his mental and emotional attitudes toward food. "Not only must the basal physiological mechanism of the individual be thoroughly investigated; in addition all other factors involved in the personality must be reviewed, all relevant factors in the life situation must be scrutinized and evaluated."²

It is especially important to understand the mental life of the child and to help him develop right attitudes toward food, since it has been demonstrated that mental as well as physical habits are developed in childhood that affect the health status throughout the entire span of life.

It would be simple if the deviation from the normal in food habits or in personal hygiene could be traced to a single causal factor. Rarely can this be done. Behavior in relation to food is often a matter of interplay between the physical and emotional life. The motives may be hidden in a condition or a combination of circumstances seemingly unrelated or only indirectly related to food and consciously or unconsciously guarded by defensive attitudes that are difficult to penetrate.

There is evidence of increasing interest in the subject of the relationship between

² Campbell, Charles Macfie, *Human Personality and the Environment*, p. 5, Macmillan Co., 1934.

eating habits and personality traits, and many studies have been made. However, there is need of much further research, and meanwhile the principles of psychology and psychiatry and the various other sciences basic in the field of mental hygiene must be relied upon for help in interpreting food in its significant social implications, or in estimating rightly the influence of mental attitudes upon food habits.

An understanding and appreciation of mental attitudes and social settings, when developing a dietary plan with the patient, will make for more intelligent coöperation with others who are participating in his treatment. There must, of course, be a differentiation between cases in which a few suggestions to the patient will solve the problem and those where a penetrating and systematic analysis of personality must be undertaken.

The patient himself must be led to understand the problems that his situation presents, and the significance of his attitude toward food, to the end of developing in himself a sense of responsibility toward the solution of his difficulties, and a desire to follow a plan for an adequate diet.

The Income and the Necessaries of Life in Relation to Mental Attitudes

When an inadequate income or loss of employment entails living conditions that are unsatisfactory, limits the outlay for food, for the home and household facilities and for clothing, and threatens the sense of security that the possession of savings gives,—these limitations in the physical environment often produce unhappy mental and emotional reactions. Harassed with fear and worry over the future for himself and his family, frustrated in many ways, resentful, discouraged to the point

of indifference, with loss of faith in the possibility of a better future, the patient can make but little effort to help himself in the plan for dietetic treatment. "The stress of a psychological situation influences emotions, alters the direction of thought, modifies the code of values."³ "Why make a plan for me?" the patient will say. "Where am I to get the food? What is the use of planning a diet when there is no money to pay for food?"

The individual of independent spirit strives to maintain as long as possible the standards of living that are visible to the world,—those related to place of residence and type of clothing. Only he and his family need know what food they are consuming and whether in adequate quantities. From a feeling of pride or shame the child or adult may describe his diet not in terms of what he is eating but what he thinks his food habits should be; or with a hostility born of sensitiveness he may resent questions concerning his diet and begrudge giving information. Such attitudes impede dietetic treatment, which cannot become effective until the patient can assume a more normal mental state and is willing to discuss his situation frankly.

The young people of the family who go out to work acquire a feeling of independence because of the financial contribution they make to the household. This may lead to greater coöperation in achieving and maintaining higher dietary standards with which the parents are in sympathy; but it may be a source of constant disturbance and dissension concerning money and ways of living. The independent young girl often arouses conflicts in the family concerning her diet,

³ Campbell, Charles Macfie, *Human Personality and the Environment*, p. 5, Macmillan Co., 1934.

when in her desire to maintain a certain weight she persists in food practices harmful to health.

Nationality

Similarly racial customs and religious laws pertaining to food tend to exert an important influence on the emotional life. There is a constant feeling of discontent in the elders, for example, when the home is not near the markets from which accustomed foods can be obtained. Within the home, conflicts arise when the young people become critical or hostile and irreverent toward food customs cherished by their elders. Sensitive concerning accustomed food habits and fearful that they will be misunderstood, a patient often becomes unhappily self-conscious when describing his food intake, and may even deny certain food usages characteristic of his race. In planning the diet with the patient who prefers his food prepared in the traditional ways, care must be taken to adhere to the accustomed foods or methods of preparation in order to avoid arousing disapproval, distrust or resentment.

The use of certain foods is associated with religious and historical holidays, and the patient becomes unhappy at the thought of being restricted in his choice of food on such occasions. This attitude changes to one of pleasure and interest in his diet when it is demonstrated by a display of foods that he need not feel set apart from his family at such times but can share in the feast without exceeding his diet (Part I, Chapter V).

In the social life without the home, food customs often cause unfavorable emotional reactions. The patient may not like to eat with others than his own group, or out of loyalty to religious laws he may feel that he cannot eat where these are not observed. He may be reluctant to dis-

play a lunch containing foods that are distinctive of his race or religion to a group whose food customs are different from his own. A feeling of timidity, insecurity or resentment may be aroused in him, as in the case of other economic or social differences, and in self-defense he purchases a lunch that conforms to those of his companions, although it may be less desirable and more expensive than he can afford. His choice of place for spending vacation periods may be limited by the same considerations.

Language difficulties due to unfamiliarity with the language of the adopted country limit the patient's contacts and his understanding of practices other than his own. These restrictions give rise to feelings of inferiority or frustration which often make for conflict in the family life. In the clinic, when the patient does not understand directions and perhaps cannot make himself articulate, he again feels that he is being limited in the participation of what is of vital concern to him. It will be shown how, in the interests of developing a favorable attitude toward the diet and dietary directions, the patient is helped to overcome these difficulties of language, with their effects of confusion, antagonism, futility, and the discouraging sense of being misunderstood (Part I, Chapter V).

Sleep and Rest

The quality of sleep and rest affect one's mental and emotional reactions to a considerable degree. Often, it is not a dislike of food that is the disturbing factor in the behavior of the child who will not eat his meal, but irritability due to overactivity or insufficient rest, or both, for these are among the primary causes of lack of appetite in both child and adult.

Body Cleanliness

Even though body cleanliness may be no more than an aesthetic consideration, it induces the feeling of well being which, in turn, is reflected in the enjoyment of food.

With wise guidance, adaptation of facilities and the establishment of a daily regime the child can be led to develop proper habits of cleanliness as a matter of routine and to practice them contentedly and with pride. But when the mother or adult resorts to nagging, struggle or punishment in training the child to habits of cleanliness, the unhappy mental state produced in the child may affect the appetite unfavorably, and is very likely to do so if the unpleasant situation occurs just before a meal time. Moreover, in developing habits of cleanliness it is most unwise to use food as a means of discipline and so to invest it with unhappy associations.

Bowel Elimination

Because of social taboos, an atmosphere of shame and false modesty has been created with respect to the processes of urination and bowel elimination. In taking a nutritional history it usually becomes evident that in most family circles the correct names for the body parts and their functions are avoided, and names with little or no meaning are substituted to disguise reference to them. This retards a proper understanding of these processes. False standards are often created, and emotional disturbances are associated with the organs of excretion. The patient develops an attitude of reserve, and even of shame, with regard to them, which is often inhibiting to the proper functioning of the body. The dietary can hardly overcome these conditions.

The Occupation and the Daily Regime

A lack of interest in or of a desire to follow a suggested dietary procedure or hygienic regime is often due to unhappiness in conditions of work. An unpleasant situation faces the child at school or the worker at his trade, and mental or emotional disturbances are created that may manifest themselves in divers undesirable patterns of behavior. Emotional distress may be expressed overtly, seemingly without relation to cause, in the form of food dislikes. Often a food idiosyncrasy, an unwholesome attitude toward food can be traced to such deep-lying causes. They may represent an escape from an intolerable life situation. And when these attitudes are carried into the home they may have a disturbing effect upon family food habits. It is important, then, to know whether the child is reasonably successful and happy in his school life, in his work and in his friendships; whether the worker's position holds a promise for future advancement, provides pleasant human relationships and compensation adequate to maintain positive health, mental as well as physical.⁴

The nervous breakdown of the housewife is likely to be due to maladjustment resulting from a sense of inferiority with regard to her work, which is often expressed in overanxiety, worry, discontent, imaginary illnesses, fear of disease, or a food dislike. She may become indifferent to good dietary standards to the point of being indulgent to herself and her family, and cease to set an example with respect to an intelligent dietetic and hygienic regime.

The child's life is regimented to a great

⁴ Stern, Frances, *The Nutritionist Looks at Mental Hygiene*, *Mental Hygiene*, Volume XIV, No. 1, January, 1930.

extent by food. The infant becomes aware, through hunger pangs, of his need of food, and derives contentment when that is satisfied. The various factors that have already been considered as a part of the day's regime,—activity, habits with respect to sleep, play and body cleanliness,—all affect the child's attitude toward food. The healthy, happy child, with good health habits, comes to his meal with a zest for food, and partakes of it in the same spirit in which he carries on the other activities of his day's work and play. These desirable behavior patterns with respect to food must be carefully cultivated from earliest childhood, not only to satisfy nutritional needs but as a foundation for right attitudes towards food in later life.

But there is another picture, well known, of the child who becomes resistant and resentful at the call to stop his play and "wash up" in preparation for meal time; or the child who indulges in food idiosyncrasies, and dawdles in eating, perhaps daydreaming, making of the meal time a period when he can profitably act the dictator, or using it as a device for securing undue attention. Under such conditions meal time awakens undesirable attitudes that provoke irritability, anger and unhappiness, with ill effects not only for the child himself but for the rest of the family.

The meal time should be a means of developing a healthful attitude toward food. Here, as in other situations, the child looks to the adult for an example of behavior as well as for encouragement, and the adult will often find in the child's attitude toward food a reflection of his own. Modern health education is making of the school lunch, from the nursery school onward, a means for cultivating good food habits in an atmosphere of

happiness and in a spirit of coöperation on the part of both child and adult.

Recreation

For the adult and the child, recreation and play contribute to the feeling of well being, and there is usually greatest enjoyment of food after zestful activity. But play or recreation may be a source of disappointment and unhappiness, due perhaps to lack of skill or to physical disability. Often feelings of shame, jealousy, and timidity or insecurity as to status in the group are engendered, extending perhaps to underestimation of the ability for accomplishment in other fields and leading to withdrawal from social contacts. Under these conditions undesirable personality traits develop that may become manifest in apparent inability to eat, or in refusal of food as a form of reprisal.

Today there is happily a healthier tendency to enter into group play and recreation with the purpose of correcting or compensating for some deficiency, either physical or mental, and through new interests and associations to overcome self-indulgence and whims, including food idiosyncrasies, and to pursue a normal life including a normal diet.

In the use of the Nutritional History (Part I, Chapter 2), every-day situations such as these that have been suggested are scrutinized carefully. Commonly looked upon as routine matters they are found to have definite relationship to food behavior. Many other such factors than are referred to here would suggest themselves in the study of patients individually.

Food is an integral part of the patient's life. The pattern of his food behavior, good or poor, favorable or unfavorable to dietetic treatment, is the product of his background,—his environment, training

ENVIRONMENTAL FACTORS

and reaction to experience. Clearly, knowledge of his physical needs and of the foods that fulfill them is not sufficient; it is of greatest importance to understand the pattern of his food behavior in the light of social settings. Always the distinctive food habit will be found to have a much deeper significance than appears on the surface. It is symptomatic, conditioned by life situations. When the Nutritional History records attitudes of resistance, resentment, or frustration, their cause must be found before they can be overcome. It should be known for what purpose the patient is using food other than to satisfy normal needs and desires.

For those who are engaged in the study and interpretation of human personality, herein lies opportunity to supply scientific data. A closer correlation of the observations and findings of the various groups having a common interest in these studies should yield much of benefit in the treatment of the patient. In applied dietetics this material would be of increasing importance.

SUMMARY OF THE FACTORS OTHER THAN FOOD THAT INFLUENCE A DIET

Income and Expenditure: The income controls the standard of living to so great an extent, that it must always be given due consideration in relation to the diet. Because of the close interrelationship of the necessities of life, it is essential to be aware of other demands which so often prevent the fulfillment of the body's needs for food.

Nationality: Racial stock, traditions and age old practices affecting the choice and preparation of food play a large part in determining the eating habits of the family and the individual.

Education: Language and mental capacity determine the method of teach-

ing, and affect the ability of the person to learn the food values.

Food Within and Outside the Home: A lack of knowledge of ways of purchasing, storing and preparing food, and of food values conditions the feeding of the family. The adequacy of the meal which is carried from the home or eaten in the restaurant will also depend on the thought given to the fulfillment of the body needs for the day as well as the amount of the income.

Sleep and Rest: Insufficient rest or sleep causes conditions such as fatigue and irritability that affect the appetite unfavorably.

Body Cleanliness: Body cleanliness is associated with good food habits and is important in the practice of preventive medicine.

Bowel Elimination: Proper habits of bowel elimination are related not only to the kinds and amounts of the food and fluid intake but also to such factors as the daily regime and the toilet facilities.

The Occupation and the Daily Regime: The hours of work will affect the enjoyment of the diet by determining the times for meals as well as other activities.

Recreation: Physical fitness for play depends largely upon a proper food intake. Activity should not result in excessive fatigue. Recreation contributes to a feeling of well being and there is usually enjoyment of food after zestful activity.

Interrelationship of Food and Mental Attitude: The pattern of food habits is usually significant of certain mental attitudes influenced by life's situations which must be understood and taken into consideration when developing a dietary plan.

CHAPTER 5

THE EDUCATION OF THE PATIENT ON THE NORMAL DIET

The fulfillment of the diet plan depends to a great extent upon the successful education of the patient in the principles underlying his diet. These must be presented to him clearly and simply.

GAINING THE CONFIDENCE AND CO-OPERATION OF THE PATIENT

To obtain the comprehensive knowledge of the patient that is essential in teaching him in relation to his needs, it is important to have his confidence and coöperation, and these he will give in response to a kindly approach and sympathetic interest. Helped further by an understanding of human relationships, one should be able, in taking the Nutritional History (Part I, Chapter 2), to form the desired picture of the patient as a whole—his personality and intelligence level, his daily régime and environmental conditions.

In discussing with him his special interests and leading him to talk freely of his daily life, friends and family, much helpful information can be secured without direct questioning. One should be able to recognize the presence of inhibitions or disguised motives, as when the patient wishes to cover poverty or other unsatisfactory living conditions; for the information upon which the diet is based must be accurate or it will obstruct correct dietetic treatment.

Furthermore the surroundings in which treatment is given will affect the patient's attitude. Posters and pictures illustrating fruits, vegetables, the grains, or a principle of hygiene, by possessing artistic merit enhance interest

in and the desirability of the health practices which they suggest. The Russian samovar, the coffee pot of the Near East countries, the Italian pottery and other household objects, of artistic as well as of cultural value, are evidence to the foreign-born patient that the crafts and customs of his native country are appreciated. Pictures and other objects of interest can be chosen that besides being decorative will have definite value both for direct and indirect teaching.

A room that is attractively decorated, and which gives opportunity for a private, unhurried conference in a quiet, friendly atmosphere will induce the patient to speak freely and frankly. These desirable conditions can be provided in office and clinic, and will have the effect of stimulating the patient to greater coöperation in constructing the plan of his dietetic treatment.

(AROUSING AND SUSTAINING INTEREST

The patient must acquire the information that will enable him to carry out his diet at home intelligently and faithfully. Moreover, he must be actuated to apply the knowledge he gains to the formation of desirable habits. And on return visits, praise for progress, and encouragement in overcoming his difficulties, should help to sustain his interest and give him inspiration for successful accomplishment.)

In the following pages methods and means are presented for teaching the patient. The extent and manner of using this material will depend upon

the patient's intelligence level, his actual knowledge, what it is desired to accomplish in his behalf and the time that can be devoted to his instruction. The teaching procedure described here follows logically the points considered in Part I, Chapter 2. However a different method does not preclude the use of the materials or suggestions given herein.

APPROACH TO THE PATIENT

The *method of approach* to the patient will be determined by what is learned in conference with him.

The content of necessary knowledge should be developed slowly with the average patient, to be certain that he is learning and applying the information gained. So far as possible the patient's own knowledge and experience should be used, because it will give him a feeling of security to start from the known and gradually proceed to the unknown. The process of his education will often extend over many visits, the points made being continually reemphasized and new ones advanced.

Language difficulties, as with the patient who is foreign born, call for special aids in teaching, such as food models or food pictures, to help visualize the foods that may be used. Books contain helpful pictures, and magazines and catalogs will furnish illustrations that can be pasted into a notebook for convenient reference. Such illustrations help the patient to identify foods which, though familiar to him, he does not recognize by their names in the unknown language.

When it is necessary to make use of an interpreter it is especially important to visualize directions as far as possible, so that the patient may understand them, at least in part, and not have to depend wholly on the interpreter.

The *child and the mother* should, if

possible, make the first visit together when the child is the patient, since the child is dependent on the home to supply his needs. The conference with them should yield insight into the home conditions, the relation between mother and child and the child's relations to other members of the family, upon which so much of the ultimate success of the diet plan depends. Both mother and child should understand the principles underlying the diet, and have a common interest, a unity of purpose, in fulfilling the requirements. A spirit of domination on the part of either is to be deprecated. Lest the child become introspective he should be helped to feel that he can participate as usual in the general family life.

Methods of teaching the child should be adapted to his intelligence level. Illustrative materials—pictures, games, stories, handwork, experiments and exhibits that utilize the child's interests and experience—are of great value. By these means, and in words that he can understand, the child can be taught the body's needs, the food constituents and how food serves the body,—just as the adult is taught them in more advanced terminology. Helpful methods of teaching these principles have been evolved, with illustrative materials, in a series of lessons for children published under the title, *How to Teach Nutrition to Children*.¹

Other members of the household upon whom the patient may be dependent for the preparation of his food should also be given directions at first hand rather than only through explanation by the patient.

The patient is often asked to keep a record of what he eats, and it is desirable

¹ Pfaffmann and Stern, *How to Teach Nutrition to Children*, M. Barrows and Co., New York, 1944.

that he should have a special booklet to serve as a food diary (p. 48). He will assign a greater importance to the diet when recorded in such form and will feel a keener desire to coöperate. While a record of this type will not be definite enough for exact computation of the diet, it will show the trend of the patient's

terms: carbohydrate, protein, fat, calcium, phosphorus, iron, vitamin A, thiamine, riboflavin, niacin, ascorbic acid, and vitamin D. The need of food for body building is illustrated by pictures of the skeleton with the foods that supply calcium, the circulatory system with the foods that supply iron, and the muscular

THE BOSTON DISPENSARY
FOOD CLINIC

What I Eat

Name.....

Address.....

Date.....

TUESDAY	Health Habits
Breakfast	
Noon Meal	
Evening Meal	
Extras	

Form 145. THE FOOD DIARY (Actual dimensions, 5" x 3¾".)

eating habits, and whether he understands his diet and is carrying it out.

CONFERENCE WITH THE PATIENT

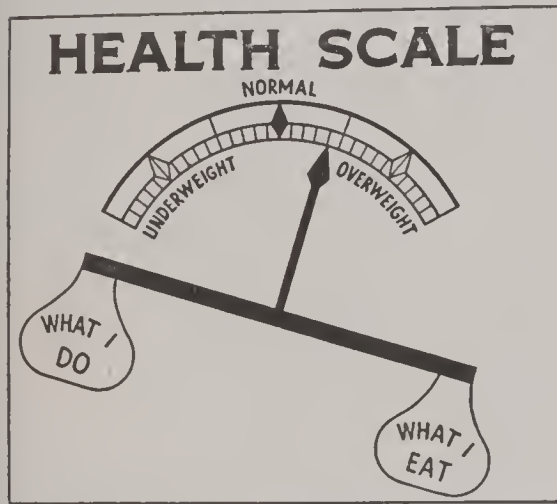
The *relation of food to the body* is developed with the patient as the guiding consideration in planning and carrying out a diet. The patient is led to understand that food and the body are composed of like materials, and that the body builds itself by transference to itself of like materials from food. He learns the

system with the foods that supply protein. The need of food to supply energy for activity is interpreted by pictures showing the body at work and play, and the foods that supply carbohydrate and fat. Likewise, a picture showing the healthy, vigorous body and the foods that supply the various vitamins illustrates the need of selecting foods that promote health, vigor, and growth (p. 51).

Such pictures or charts help the patient to realize also that certain foods—milk,

for example—serve several body needs. He will see this more clearly if the foods are arranged in the same order in each picture rather than in the order of their relative values as sources of the various food constituents. (See illustration, p. 51.)

The balance between the food intake and body needs for activity is demonstrated.



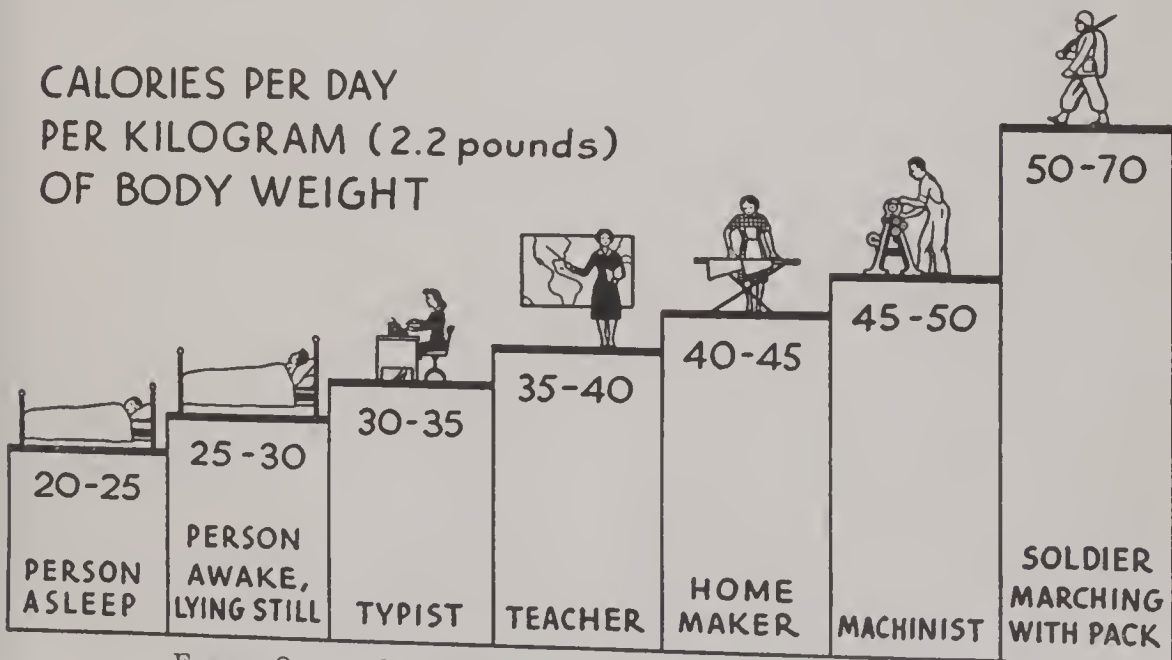
THE BALANCE BETWEEN THE FOOD INTAKE AND BODY ACTIVITY

The patient is led to see that a certain

balance must be maintained between the food required to fulfill the body's energy needs and the food intake. He sees that when the activity of the body is increased, the food intake must be increased to satisfy the greater energy requirement or the body will be forced to use its own substance; and on the other hand, that if the food intake is greater than is required for the energy output, the excess will be stored in the body. This relationship may be illustrated by a picture or a drawing of a balance showing on one side "What I Do," representing the body's activity and on the other side, "What I Eat," representing the foods to supply the needed energy (p. 49). A drawing of individuals engaged in graded types of activity—lying down, sitting, walking, running, at play, at work—and placed on ascending steps will make clear the increase in expenditure of energy (p. 49).

The choice of foods to fulfill body needs requires that the patient shall be able to

CALORIES PER DAY PER KILOGRAM (2.2 pounds) OF BODY WEIGHT



ENERGY OUTPUT CHANGES DUE TO INCREASING MUSCULAR ACTIVITIES

evaluate foods as to their various contributions to the body.

The protective diet, which has been described (Part I, Chapter 2), may be used as the basis for teaching the patient the foods that he should choose daily in his diet to insure adequacy. The patient may be given a written or printed list of the foods included in it,—milk, eggs, meat, butter, fruit, vegetables, whole grain or enriched bread and cereals, and sugars. It should state the food constituents each food contains, how each helps to protect the health of the body and the amounts of each necessary to help to insure protection. Or the foods may be illustrated with pictures accompanied with statements of the amounts of the various foods necessary for the protection of the body, and the functions of each food (p. 52).

Sometimes a patient is able, when given a list of the food values of the various foods in terms of average servings, to compute his diet in grams of food necessary to meet the food prescription (Table 22). However, in most cases the diet must be computed for the patient and the results given to him in terms of servings of food. It is sometimes found, in talking with the patient, that his usual food intake does not contain certain foods necessary for the adequacy of the diet,—perhaps because they are not customary, or are unfamiliar or too expensive, or because he dislikes them. He should be helped to realize the contribution these foods make to the diet so that he will be willing to include them. Food likes and dislikes as molded by family or religious customs also influence the choice of food and the food intake.

(The *cost* of food is a restricting factor, and when food money is limited or seems not to be wisely spent, the patient should be helped to see how he can plan more

judiciously his expenditures for food. To this end, he may be asked to keep a week's record of the kinds and amounts of food he purchases, with the costs. A special form for this purpose such as the form included in the Nutritional History (p. 11), arranged to show the patient what to record, is advisable and will impress him with the importance of keeping the record accurately.

The money that the patient's income will allow him to spend for food must be known; for upon this will depend to a certain extent the choice of food for the diet. The amount of money available must be considered in relation to the number of people for whom it must provide; for although in itself it may seem a large sum, when divided among the number in the family the allowance per person may be inadequate.

To help the patient to plan his food purchases in terms of the kinds and amounts of food that he needs, the various factors that influence the prices of food should be known, such as the quality of the food, the quantity to be purchased and whether to purchase in bulk or in package, the existing market prices and the seasonal variations in price.

Planning the best expenditure of the food money cannot be accomplished in one conference with the patient or the person who plans and purchases for the household, but usually requires several conferences. The extent to which the patient can be so helped will depend upon his intelligence, the coöperation given by himself and his family and the amount of money available—for below a certain level of cost an adequate diet cannot be purchased.

The *composition* of a food, or what it contains for body needs, should be considered along with its cost,—and that is the conception which the patient should

FEED YOUR BODY TO PROTECT YOUR HEALTH

Notice the relation between the body and food, the same substances are in both.

PROTEIN

For growth, muscle and repair

FAT

For energy to work and play

CARBOHYDRATE

STARCHES-SUGARS
For energy to work and play

CALCIUM

For bones and teeth

VITAMINS

For growth, health and vigor

IRON

For blood

RECOMMENDED DAILY NEEDS OF THE BODY*

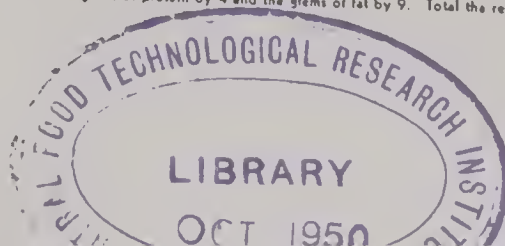
1 ounce = 30 grams — 1 milligram = 1/1000 gram — 1 microgram = 1/1000 milligram — 1 kilogram (kg.) = 1000 grams (2.2 lbs.)

	CARBOHYDRATE	PROTEIN	FAT**	CARBOHYDRATE	PROTEIN	FAT**	CALCIUM	IRON	VITAMIN A	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID	VITAMIN D
	GRAMS PER KILOGRAM OF AVERAGE BODY WEIGHT			TOTAL GRAMS FIGURED FROM AVERAGE WEIGHT			GRAMS	MILLI-GRAMS	INTERN L UNITS	MICRO-GRAMS	MICRO-GRAMS	MILLI-GRAMS	MILLI-GRAMS	INTERN L UNITS
ADULTS: Moderate Activity														
Man (154 lbs.) 70 kg.	4-6	1 - 1½	1 - 2	280-420	70-105	70-140	1.0	12	5000	1500	1800	15	75	—
Woman (123 lbs.) 56 kg.	4-6	1 - 1½	1 - 2	224-336	56-84	56-112	1.0	12	5000	1200	1500	12	70	—
Pregnancy (latter half)	5-6	1½ - 2	1½ - 2	280-336	84-112	84-112	1.5	15	6000	1500	2500	15	100	400
Lactation	7-8	1½ - 2	1½ - 2	392-448	98-112	84-112	2.0	15	8000	1500	3000	15	150	400
CHILDREN:														
1-3 years (27 lbs. 12 kg.)	10-14	3 - 3½	4 - 5	120-168	36-54	48-60	1.0	7	2000	600	900	6	35	400
4-6 years (42 lbs. 19 kg.)	8-12	2½ - 3	3 - 4	152-228	48-57	57-76	1.0	8	2500	800	1200	8	50	400
7-9 years (58 lbs. 26 kg.)	6-10	2 - 2½	3 - 4	156-260	52-65	78-104	1.0	10	3500	1000	1500	10	60	400
10-12 years (78 lbs. 35 kg.)	6-10	2 - 2½	2 - 3	210-350	70-88	70-105	1.2	12	4500	1200	1800	12	75	400
GIRLS:														
13-15 years (108 lbs. 49 kg.)	6-8	1½ - 2	2 - 3	294-392	74-98	98-147	1.3	15	5000	1300	2000	13	80	400
16-20 years (122 lbs. 55 kg.)	6-8	1½ - 1½	1 - 2	330-440	69-82	55-110	1.0	15	5000	1200	1800	12	80	400
BOYS:														
13-15 years (108 lbs. 49 kg.)	6-8	1½ - 2	2½ - 3	294-392	74-98	122-147	1.4	15	5000	1500	2000	15	90	400
16-20 years (141 lbs. 64 kg.)	6-8	1½ - 2	2½ - 3	384-512	96-128	160-192	1.4	15	6000	1700	2500	17	100	400

*Adapted from Dietary Recommendations of the Food and Nutrition Board of the National Research Council, 1948.

**The amounts of carbohydrate and fat must be adjusted to meet the caloric needs of the individual.

CALORIES: To estimate the total calories multiply the grams of carbohydrate and the grams of protein by 4 and the grams of fat by 9. Total the results.



FEED YOUR BODY TO PROTECT YOUR HEALTH

SUGGESTED KINDS AND AMOUNTS OF FOOD NEEDED PER DAY — EXCHANGES MAY BE USED



MILK

4 glasses every day for the child
2 glasses every day for the adult
1 GLASS (1240 grams) OF MILK GIVES ABOUT:

Protein (complete)	for growth, muscle and repair	8 grams
Fat	for energy to work and play	10 grams
Carbohydrate	for energy to work and play	12 grams
Calcium	for bones and teeth	.283 gram
Iron	for healthy blood	.17 milligram
Vitamin A	for health, growth and vigor	334 Intern'l Units
Thiamine		96 micrograms
Riboflavin		408 micrograms
Niacin		.24 milligram



CHEESE

American (Cheddar) Cheese
1 OUNCE (30 grams) OF AMERICAN CHEESE GIVES ABOUT:

Protein (complete)	for growth, muscle and repair	7 grams
Fat	for energy to work and play	10 grams
Calcium	for bones and teeth	.262 gram
Iron	for healthy blood	.2 milligram
Vitamin A	for health, growth and vigor	522 Intern'l Units
Thiamine		12 micrograms
Riboflavin		150 micrograms
Niacin		.06 milligram



CHEESE

Cottage Cheese (skim milk)
1 OUNCE (30 grams) OF COTTAGE CHEESE GIVES ABOUT:

Protein (complete)	for growth, muscle and repair	7 grams
Calcium	for bones and teeth	.025 gram
Iron	for healthy blood	.2 milligram
Vitamin A	for health, growth and vigor	9 Intern'l Units
Riboflavin		87 micrograms



EGG

One, preferably, every day
1 EGG GIVES ABOUT:

Protein (complete)	for growth, muscle and repair	7 grams
Fat	for energy to work and play	5 grams
Calcium	for bones and teeth	.027 gram
Iron	for healthy blood	1.4 milligrams
Vitamin A	for health, growth and vigor	570 Intern'l Units
Thiamine		60 micrograms
Riboflavin		170 micrograms
Niacin		.05 milligram



MEAT

1 serving of one of these every day
4 OUNCES (120 grams) OF MEAT GIVES ABOUT:

Protein (complete)	for growth, muscle and repair	28 grams
Fat	for energy to work and play	20 grams
Calcium	for bones and teeth	.012 gram
Iron	for healthy blood	3.2 milligrams
Thiamine	for health, growth and vigor	132 micrograms
Riboflavin		163 micrograms
Niacin		6 milligrams

* If non-fatty fish are used, extra fat can be added to the diet



BUTTER

At least 3 level teaspoons a day
(about 1/4 pound a week)
3 TEASPOONS (15 grams) OF BUTTER or FORTIFIED OLEOMARGARINE GIVE ABOUT:

Fat	for energy to work and play	15 grams
Vitamin A	for health, growth and vigor	495 Intern'l Units



CREAM

Light Cream
1/2 CUP (120 grams) LIGHT CREAM GIVES ABOUT:

Protein (complete)	for growth, muscle and repair	4 grams
Fat	for energy to work and play	20 grams
Carbohydrate	for energy to work and play	6 grams
Calcium	for bones and teeth	.112 gram
Iron	for healthy blood	.08 milligram
Vitamin A	for health, growth and vigor	1000 Intern'l Units
Thiamine		40 micrograms
Riboflavin		168 micrograms



FATS—Other Sources

3 teaspoons a day for the child
6 teaspoons a day for the adult
3 TEASPOONS (15 grams) OF THESE FATS GIVE ABOUT:

Fat	for energy to work and play	15 grams
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LEGUMES

Dried beans, peas, lentils, peanuts
2 TABLESPOONS (30 grams) LEGUMES, DRIED, GIVE ABOUT:

Protein (incomplete — supplement with a complete protein)	for growth, muscle and repair	7 grams
Carbohydrate	for energy to work and play	15 grams
Calcium	for bones and teeth	.044 gram
Iron	for healthy blood	3.1 milligrams
Thiamine	for health, growth and vigor	180 micrograms
Riboflavin		72 micrograms
Niacin		.63 milligram



BREAD CEREAL

At least 6 slices of whole grain or enriched bread every day
Whole grain or enriched cereal at least once a day
1 SLICE OF BREAD (30 grams) OR 1 SAUCE DISH OF CEREAL GIVES ABOUT:

Protein (incomplete — supplement with a complete protein)	for growth, muscle and repair	2 grams
Carbohydrate	for energy to work and play	15 grams
Calcium	for bones and teeth	.015 gram
Iron	for healthy blood	.2 milligram
Thiamine	for health, growth and vigor	72 micrograms
Riboflavin		42 micrograms
Niacin		.66 milligram



VEGETABLES

At least 2 servings every day. For safety include a green or yellow vegetable which contains vitamins and minerals
1 SAUCE DISH (100 grams) OF THESE VEGETABLES GIVES ABOUT:

	Carrots	String Beans	Tomatoes	
Protein (incomplete — supplement with a complete protein)	1	1	1	grams
Carbohydrate	10	10	5	grams
Calcium	.039	.065	.011	grams
Iron	.8	1.1	.6	milligrams
Vitamin A	12,000	630	1100	Intern'l Units
Thiamine	70	80	60	micrograms
Riboflavin	60	100	40	micrograms
Niacin	50	60	60	micrograms
Ascorbic Acid	6	19	23	milligrams



POTATO

One Potato Every Day
1 LARGE (200 grams) WHITE POTATO GIVES ABOUT:

Protein (incomplete — supplement with a complete protein)	for growth, muscle and repair	4 grams
Carbohydrate	for energy to work and play	30 grams
Calcium	for bones and teeth	.022 gram
Iron	for healthy blood	1.4 milligrams
Vitamin A	for health, growth and vigor	40 Intern'l Units
Thiamine		220 micrograms
Riboflavin		80 micrograms
Niacin		2.4 milligrams
Ascorbic Acid		34 milligrams



FRUIT

At least 2 servings every day. For safety include an orange, or other citrus fruit supplying ascorbic acid
1 SERVING (100 grams) OF THESE FRUITS GIVES ABOUT:

	Oranges	Apples	Bananas	
Carbohydrate	10	15	20	grams
Calcium	.033	.006	.008	gram
Iron	.4	.3	.6	milligram
Vitamin A	190	90	430	Intern'l Units
Thiamine	80	40	90	micrograms
Riboflavin	30	20	60	micrograms
Niacin	20	20	60	micrograms
Ascorbic Acid	49	5	10	milligrams



SUGAR

6 level teaspoons every day (1/2 pound a week)
3 TEASPOONS (15 grams) OF SUGAR GIVE ABOUT:

Carbohydrate	for energy to work and play	15 grams
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MOLASSES

1 TABLESPOON OF MOLASSES GIVES ABOUT:

Carbohydrate	for energy to work and play	15 grams
Calcium	for bones and teeth	.055 gram
Iron	for healthy blood	1.3 milligrams

learn to hold in order to secure the greatest value for money expended. Often, to this end, it is necessary to take time to discuss with him the various food groups and their food values.

Milk, on which so much emphasis is placed, is often considered expensive. But when the patient sees, from the pictures of the body systems with the foods necessary for their maintenance and health (p. 51), that milk provides more food constituents than any other single food, he realizes that for its cost he gets a very high return in food values. He can be shown also the amounts of other foods it would be necessary to use to

Moreover, it is demonstrated that slightly less than 1 cup of milk contains protein in an amount equal to that in one ounce of meat or fish, or poultry, or cheese, or in one egg, besides giving extra fat (Table 31); and in carbohydrate, one cup of milk approximates one medium orange, or two crackers or one thin slice of bread (Tables 28 and 30). Also, various foods are shown that contain the vitamins in about the same relative amounts as milk (Tables 47-51).

Thus the patient sees that even though a food is an expensive source of a particular food constituent, it may be economical as a source of another, and thereby jus-

Protein Foods	Household Measure	Protein	Fat	Carbo- hydrate	Calcium	Iron	Vitamin A	Thia- mine	Ri-bo- flavin	Niacin	Ascorbic Acid
		Grams			Milligrams		I. U.	Micrograms		Milligrams	
Milk	1 glass	8.4	9.4	12	.283	0.17	384	96	408	0.24	2
Cheese, American	1 ounce	7	9.7	0.5	.262	0.2	522	12	150	0.06	
Egg	1	6.4	5.8	0.4	.027	1.4	570	60	170	0.05	
Meat	1 ounce	5.6	4.2		.003	0.8		36	45	1.53	
Fish (non-fatty)	1 ounce	5			.005	0.27		12	15	0.69	

secure the various food constituents in the amounts supplied by a cup of milk. As a source of calcium, for example, he is shown that except for cheese there is no practical substitute for milk; that to provide the amount of calcium that is contained in a cup of milk, approximately 6 pounds of meat would be required, or exceedingly large amounts of vegetables (Table 36). Similarly, milk is shown to be a good source of phosphorus, a cup giving as much as one ounce of cheese, or two eggs, or four ounces of meat (Table 38); but not so good a source of iron, since a quart of milk would be required to supply the amount of iron contained in $\frac{3}{4}$ ounce of meat, and over 2 quarts to supply the amount of iron in one egg (Table 41).

tify its purchase. He recognizes that a food must be evaluated with reference to all of its food constituents; that milk, for example, is expensive if considered with reference only to its content of iron, yet has such liberal amounts of calcium, phosphorus, protein and vitamin A, thiamine, riboflavin, niacin, and increased vitamin D in vitamin D milk, and contributes to so many body needs that it is, in fact, an economical food. He is shown that when the bread and cereal he uses with milk are whole grain or enriched products, they will supply iron at a low cost.)

In the chart above foods are listed that are approximately equivalent to milk in protein, and they can be compared

to milk with respect also to their content of other food constituents.

Cheese can be used satisfactorily as a main dish because it can be so readily combined with cereals and other foods. The patient learns, by means of the chart, pp. 51, 52, that it is a rich source of calcium as well as of phosphorus, protein, fat and vitamin A, and that it can be combined, to the satisfaction of the appetite, with a food which will supply the carbohydrate it lacks.

The *egg* is shown under each food constituent except carbohydrate, in the illustration, p. 51. In this way the patient appreciates its significance in the diet: it is a good source of protein, fat, phosphorus and iron, and supplies vitamins A, and D, thiamine and riboflavin. Here again the patient will learn to compare the egg with other foods equivalent in food value, and to consider the cost in terms of seasonal variation and the quality or grade of the product.

Meat and meat substitutes are almost always found to be included in the patient's food intake; for meat in particular is generally desired.

It is demonstrated to the patient, as in the preceding discussion of milk, that an ounce of meat, fish, poultry or cheese, or one egg contain approximately equivalent amounts of protein (p. 53). Thus he realizes, through visual presentation, that he has a goodly range of sources of protein from which to select, and that when his money for food requires the choice of one of the cheaper sources he is still satisfying body needs.

He learns that meat is also a good source of phosphorus and iron, and that it adds fat in varying amounts: that with respect to the vitamins it can be considered a source of thiamine, riboflavin and niacin. While the average serving of fish is almost equivalent in protein—and only

slightly less so in phosphorus—to the average serving of meat, it is lower in fat and iron.

Butter is an important source of vitamin A, as well as of fat. The margarines that are now fortified with vitamin A make them of equal food value. However, the vegetable oils, such as olive oil, do not carry vitamin A.

Vegetables and fruits are frequently used in minimum amounts and even omitted from the diet as the patient considers them expensive and of little food value. Again, the pictures of the body systems with the foods that supply their needs, in which vegetables and fruits appear so frequently, will show the patient that for their rich and various contributions to the body these foods are not expensive. He learns that they contain varying but appreciable amounts of carbohydrate, minerals and vitamins. When the cost of the diet must be kept low, the vegetables and fruits that are the cheaper sources of the food constituents are stressed. For example, to ensure adequate amounts of ascorbic acid in the diet, oranges or other citrus fruits, tomatoes, or raw or leafy vegetables must be taken daily, the choice being made according to the cost—oranges when they are cheap, fresh tomatoes and cabbage in season and canned tomatoes when fresh foods are expensive (Tables 34 to 51).

The discussion of fruit provides an excellent opportunity to demonstrate the place of candy in the diet, especially to the child. He is shown that the candy usually eaten can score only one point in its favor,—it provides energy for the body; whereas fruit scores several points in that it is not only a source of energy but in addition provides minerals and vitamins necessary for the protection of health. It is especially important to stress these facts to the patient whose

diet is apt to be lacking in minerals and vitamins, either because of faulty food habits or for economic reasons. It often appeals to the child to show him in terms of food values what he receives for his pennies spent for candy and those spent for fruit—such as the orange, or banana or apple.

The more desirable types of candy, those made with dried fruits, nuts and molasses may be emphasized by giving the patient recipes for making them. The appeal of these, especially to the child, may be increased by putting the recipes into booklets with attractive covers. Samples of such candies may be given; and this affords an excellent opportunity for stressing the time at which candy may best be eaten—after the meal so that it will not interfere with the appetite. The preparation and distribution of these “healthful sweets” in attractive containers at the holiday season adds to the festive spirit and helps to interest the child so that the recipes will be tried at home.²

Legumes or seed vegetables are so frequently used in the low cost diet that emphasis is placed on the importance of combining them with a food that is a source of complete protein, such as milk, cheese, egg or meat, to make a satisfactory meat substitute. It is demonstrated that they contain rich amounts of carbohydrate, phosphorus, iron, thiamine, and riboflavin, but only incomplete protein (except for the soy bean), and no fat,—which doubtless accounts for their being combined with a food of high fat content in many traditional dishes.

Bread, cereals, crackers, and flour are the forms in which the patient knows the grains. He is shown the different kinds of grains that are generally used—wheat,

oats, rice, rye, barley and buckwheat—and their contributions to the body are explained and illustrated. Both adult and child are interested in a discussion of the seed of the grain. By means of diagrams and other devices, the patient is shown how the different layers of the seed may be removed in the process of milling (p. 57). The whole grain products represent more nearly the entire content of the seed and contribute minerals and vitamins that are lacking in the refined products. The white inner part of the seed is used for white flour and white breads and cereals—products which are mostly starch and lacking in vitamins and minerals. At the suggestion of the government, manufacturers now add iron, thiamine and niacin to these products so that they now approach the food value of the natural product. Thus the patient is led to see the advantage to the body of using the whole grain or enriched products.

When the price of *potatoes* is high, many people use macaroni or white rice instead. The patient is shown that these are not comparable in food value because macaroni and white rice lack the minerals and vitamins which the potato supplies unless they have been fortified as described above, although they contain approximately the same amount of carbohydrate.

The *protective diet* (Part I, Chapter 2, p. 7) is now better understood by the patient as to the completeness of its contribution to body needs. He realizes the significance of the word “protective,” and that the prominence is given, rightly, to milk, eggs, meat, butter, vegetables, fruits, and whole grain or enriched products. That the normal diet is a protective diet can be impressed upon the patient’s mind in the form of a game, by listing on graph paper, or on paper similarly ruled, the foods contained in the

² How to Teach Nutrition to Children, Chapter IX—“Healthful Sweets.”

normal diet, with headings for the various food constituents, and checking, either with a mark or drawings or miniature pictures of the foods, the constituents that each food contributes.³

The patient sees that the protective diet is a guide to the selection of foods to fulfill the body's needs. If in following it he chooses the cheaper cuts of meats or the meat substitutes, and the cheaper fruits and vegetables when they provide the desired food values, he will have an adequate diet at minimum cost.

Individual taste may lead the patient to omit certain foods from his diet because they are strange, or because he is not accustomed to them or dislikes them. If they are essential to the adequacy of the diet, the omission cannot be disregarded. The reason for the omission, whether due to a mental attitude, a physical condition or a social or economic factor, should be ascertained. If the food is unfamiliar or not customary a sample of it is shown, and frequently the patient tastes of it in the clinic or takes a sample to use at home, with suggestions for ways of preparing it and including it in his diet. If the name of the food is new to the patient, or difficult to spell or pronounce, it is written for him and pronounced repeatedly. Knowledge of the contribution that the food makes to the body's needs and pictures that illustrate the food constituents it contains, will help him to realize its value. Pictures of healthy animals on a satisfactory diet in contrast with others suffering from diets deficient in the necessary food constituents will illustrate for him the ill effects upon health when certain of these food constituents are not present in the diet (p. 58-59). Suggestions for new ways of preparing the food

disliked are helpful, and the patient may gradually lose his distaste for a food if it is served at first in small amounts. If a food is disliked because of some unpleasant association with it, the patient is helped to overcome the effects of this association, and here much help can be given by the psychiatrist (Part I, Chapter 4).

Nationality, race and religion are important factors in determining food likes and dislikes, and the customs and food habits of the family. To work intelligently with people of foreign birth or their immediate descendants, and to win their confidence and coöperation, there must be an understanding of their racial backgrounds and the significance of their holiday observances and religious ceremonies, their social traditions, customs and beliefs.

A study of the food habits of the different races will relate itself to the political and economic situations of a country, its geography, history, topography, and climate. The study will inevitably lead to a comparison of the means and methods of production, preservation, supply and distribution of food in countries of advanced civilization and in those of more primitive standards, and show how these factors determine the food practices of the various peoples.

A knowledge of racial backgrounds influencing habits and customs, the manner of life and ideals of peoples, their art, culture, literature and technological progress, cannot but result in a greater appreciation and understanding of the foreign-born patient, a clearer insight into his problems and greater success in teaching him and planning his diet with him. With such a point of view American ways will not be imposed upon the patient, but the better features of the native diet will be brought into harmonious adjustment

³ See booklet and chart prepared by the Boston Dispensary Food Clinic for the Maltex Co., Burlington, Vermont.

DIAGRAM OF WHOLE GRAIN

BRAN

The husk and brown layers rich in ...

iron for healthy blood
phosphorus for bones and teeth
protein (incomplete) to help keep the nerves healthy, help
thiamine growth, stimulate the appetite, aid
the regular bowel movement, help to
burn carbohydrate

ENDOSPERM

The white center of the wheat berry composed of ...

carbohydrate
(starch) for energy
protein (incomplete) .. for growth, muscle and repair*

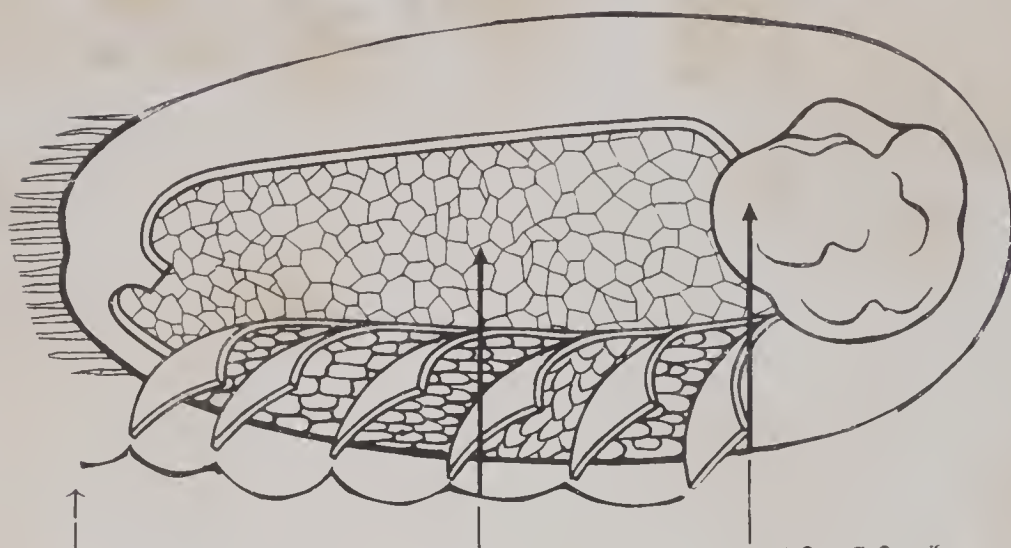
GERM

The plant germ or embryo, the part which sprouts when the wheat berry is planted. A valuable source of

protein (incomplete) .. for growth, muscle and repair*
thiamine to help keep the nerves healthy, help
growth, stimulate the appetite, aid
the regular bowel movement, help to
burn carbohydrate
riboflavin promotes growth, helps to keep skin
healthy, helps eyesight, essential to
functioning of every body cell
niacin helps growth, prevents pellagra, keeps
skin and other tissues healthy

* When supplemented by a complete protein.

Courtesy of the Ralston Purina Company (Adapted)



with changes which under the new environment are necessary for the protection of health.



Courtesy of National Dairy Council, Chicago, Ill.

MILK MADE THE DIFFERENCE. "AND THIS LITTLE PIG HAD NONE!"

Yet diets the world over are made up of food materials that can be classified under a very few heads: dairy products, eggs,

meat, fish, fats, fruits and vegetables, cereals and breads, and sweets. The difference lies chiefly in the specific foods used from each of these groups, and in the methods of preparation. An understanding of food usages, as well as of dishes and their ingredients, typical of a people, is essential when teaching the foreign-born patient (Table 4).

The diet is computed in general terms in relation to information obtained through the Nutritional History, the patient's usual food intake, his individual tastes and the food usually available in the home or eating place outside the home.

The *measurement of foods* to be used daily should be stated in definite amounts, and in terms that the patient will understand and find practical, so that he can estimate his servings with a fair degree of accuracy, thus helping to ensure his use of foods in prescribed amounts to fulfill body needs.

Household measures most frequently used are the tablespoon, teaspoon and measuring cup. These utensils are shown to the patient to make sure that he is familiar with them and visualizes them. In like manner the differences in level, rounded and heaping measurements are indicated (Table 18).

Other units of measurement familiar to the patient are the sauce dish and the cereal bowl, and these are practical units to use if the patient is accustomed to having food served in such dishes. He is shown a dish of the usual size and asked to compare it with the one he uses at home. The level to which the average serving fills the dish is also demonstrated.

The *ounce* is sometimes explained in terms of the tablespoon, one ounce being equal to two tablespoons of fluid, and an ounce of cottage or cream cheese equaling one rounded tablespoon. The terms cup,

pound and other measurements should be written out, as abbreviations may be confusing to some patients.

The *inch* is used to describe the dimensions of the average serving of certain foods, such as bread, crackers and cake. The patient often finds this measurement particularly difficult to visualize, and therefore it is important to demonstrate it by means of real foods or food models,

to the patient and also a meter stick if desired. The gram can further be related to the ounce, which is familiar to the patient, explaining that 30 grams equals 1 ounce. A gram weight which is commonly used in laboratories can be shown. The patient can also be taught that when the gram is divided into a thousand parts, each part is called a milligram; and when the gram is divided into



BEFORE AND AFTER ADMINISTRATION OF RIBOFLAVIN

How the little rat looked when he was having food that did not contain riboflavin; and how he looked when he was given different food that contained enough of the vitamin.

or by means of the ruler. In this way he retains a mental picture of it by which to estimate his servings.

The *gram* is frequently referred to when teaching the patient (p. 61-63), and it is therefore necessary to explain and teach the metric system. A gram can be explained as the weight of the amount of water or like substance that would be contained in a cube with its three dimensions each measuring 1 centimeter ($1/100$ of a meter). Such a cube can be shown

a million parts, each part is called a microgram. Further, a gram multiplied by a thousand makes a kilogram, which is equal to 2.2 pounds.

A *demonstration of the servings of foods* will give the patient a definite picture of the sizes of the servings he is to use so that he can estimate them without having to resort to the use of the teaspoon, the tablespoon and the measuring cup in apportioning the amounts of food prescribed in the diet.

Food models especially are helpful in demonstrating certain foods which are irregular in shape or size, such as meat for stew, since the dimensions cannot be given in inches. Although real foods can be used, reproductions of the average servings of foods in wax are more convenient. The initial cost of wax models is offset over a period of time by not having to replenish daily the fresh foods, and their use is far more economical in the end. They can be used where it would be impossible to renew the food daily. If wax models are not available, cardboard cut-outs or pictures of the actual sizes of the servings of the foods can be used. These are not so satisfactory, however, since they do not give all the dimensions.

Dietary directions should be written preferably on a special form. The patient will regard this as of the same nature as the prescription which he receives for medicine,—they are both orders or directions that should be carried out. Moreover, the fact that the diet is especially planned for him helps to restrain the patient from trying to apply it to other members of his family or to his friends. A printed diet list is not desirable, even when individualized to a certain extent by crossing out or encircling the foods not to be used.

"Food for the Day" (Part I, Chapter 2), which lists the kinds of food to be used, with amounts in household measures, gives the patient a general view of his dietary plan. He can see where it is like his usual diet, wherein it differs, and whether it provides enough food and food of the kind that he likes. Thus it does not seem altogether new and unfamiliar to him. It will show him whether he can fulfill it from the food usually available at home or in the place where he eats. Moreover, he can use the list

as a guide in planning, purchasing and preparing foods for his diet.

Exchanges of the foods listed in "Food for the Day" should be known by the patient so that he may find the diet flexible and be able to vary it within the limitations it prescribes. For this he must learn the values of the different foods given, and how these foods may be exchanged for others approximately equivalent in food value. A means of helping him here is to state on the form, "Food for the Day," or on a separate list, the amounts of various foods that he may substitute for those prescribed in the diet. Frequently it is expedient to demonstrate to him in what respect these foods are equivalent so that he will better understand and remember them.

The *carbohydrate* content of vegetables and fruits is often expressed in terms of percentage,—“5 per cent,” “10 per cent,” “15 per cent,” “20 per cent” vegetables and fruits being the classifications popularly used. But since it is not easy for the average patient to think in terms of percentage, a simpler method must be used to help him to visualize the carbohydrate content of foods. The piece of loaf sugar that measures one level teaspoonful weighs five grams. It is convenient, then, to visualize the approximate carbohydrate content of the average serving of vegetables and fruits with one, two, three, four or more lumps of sugar.

Moreover, the lump of sugar can be used to show how many servings of a fruit or vegetable the patient may take in terms of his diet, and how he can interchange them. For example, he understands that four servings of a “5 per cent” vegetable approximate four lumps of sugar, and that instead he may have two servings of a “5 per cent” vegetable and one serving of a “10 per cent” vegetable, or two servings of a “10 per

ONE OF A SERIES OF FOOD EXCHANGE LISTS USED WITH AND DISTRIBUTED TO THE PATIENT

FOOD EXCHANGES—CARBOHYDRATE

Carbohydrate (sugars and starches) is the name given to the food constituent that provides the body with energy to work and play. Carbohydrate is found in milk, fruits, vegetables, bread, cereal, flour, flour products, sugars, such as sugar, candy, jelly and honey, and desserts, such as pie, cake and cookies, and in tonic or pop.

MILK, BREAD, CEREALS, CRACKERS, FLOUR AND VEGETABLES

Each of the following servings contains about 15 grams of carbohydrate, equal to the amount in 3 lumps of sugar.

<i>Breads</i>		<i>Flour & Flour Products</i>	
Baking powder biscuit (2 inch diameter)...	1	Cornstarch.....	1½ tablespoons
Boston brown.....	1 thin slice	Flour.....	3 tablespoons
Rye.....	1 slice	Macaroni, cooked.....	1 sauce dish
White.....	1 slice	Matzoh meal.....	3 tablespoons
Whole wheat.....	1 slice	Noodles, cooked.....	1 sauce dish
		Tapioca, dry.....	1 tablespoon
<i>Cereals</i>		<i>Milk & Milk Products</i>	
Cornflakes.....	1 full sauce dish	Dried milk.....	3 tablespoons
Cream of Wheat.....	1 scant sauce dish	Evaporated milk.....	¾ cup, scant
Maltex.....	1 sauce dish	Ice cream	
Oatmeal.....	1 sauce dish	(commercial).....	3 rounded tablespoons
Puffed Rice.....	1 heaping sauce dish	Skimmed milk.....	1½ cups
Puffed Wheat.....	1 heaping sauce dish	Whole milk.....	1½ cups
Ralston.....	1 sauce dish	<i>Vegetables</i>	
Rice.....	1 sauce dish	Beans, baked.....	2 rounded tablespoons
Shredded Wheat biscuit.....	¾	Beans, Lima.....	1 scant sauce dish
<i>Crackers</i>		Corn, canned.....	1 sauce dish
Crax.....	4	Corn, fresh.....	1 small ear
Graham.....	2	Parsnip.....	½ large
Matzoh wafer (6 inch diameter).....	1	Potato, sweet.....	½ small
Oyster.....	20	Potato, white.....	1 very small
Ry-Krisps.....	3		
Saltines.....	5		
Uneddas.....	3½		
Form 142-5M			

Boston Dispensary Food Clinic

ONE OF A SERIES OF FOOD EXCHANGE LISTS USED WITH AND DISTRIBUTED TO THE PATIENT

FOOD EXCHANGES—CARBOHYDRATE

Carbohydrate (sugars and starches) is the name given to the food constituent that provides the body with energy to work and play. Carbohydrate is found in milk, fruits, vegetables, bread, cereal, flour, flour products, sugars, such as sugar, candy, jelly and honey, and desserts such as pie, cake and cookies, and in tonic or pop.

FRUIT

Each of the following servings contains about 10 grams of carbohydrate, equal to the amount in 2 lumps of sugar.

Apple, large (3½ inch diameter).....	½	Orange, small*.....	1
Apricots, dried, halves.....	2-3	Orange juice*.....	½ cup, scant
Apricots, fresh, whole.....	2	Peach, medium.....	1
Avocado, medium.....	1	Pear, large.....	½
Banana, medium.....	½	Pineapple, fresh (¾ inch thick).....	¾ slice
Berries.....	½ cup	Pineapple juice (unsweetened)....	½ cup, scant
Cantaloupe, medium.....	½	Plums, large.....	2
Cherries, small.....	12	Prunes, small.....	2
Cranberry sauce.....	1 tablespoon	Raisins.....	1 tablespoon
Dates.....	2	Rhubarb, raw (no sugar).....	2½ cups
Figs, small.....	1	Strawberries, large.....	12
Grapefruit, small*.....	½	Tangerines, small*.....	2
Grapefruit juice (unsweetened)*..	½ cup, scant	Watermelon.....	1 thin slice
Grapes, Tokay.....	14	* Citrus fruits are valuable as a source of ascorbic acid.	
Lemons, large*.....	1½		

5% VEGETABLES

Each of the following servings contain about 5 grams of carbohydrate, equal to the amount in 1 lump of sugar.

Asparagus, long.....	10 stalks	Escarole.....	1 sauce dish
Beans, string, canned.....	1 full sauce dish	Lettuce.....	15 leaves or $\frac{3}{8}$ head
Beet greens.....	1 sauce dish	Pepper, green.....	1 medium
Broccoli.....	1 sauce dish	Radishes.....	12
Cabbage, cooked.....	1 full sauce dish	Sauerkraut.....	1 full sauce dish
Cabbage, raw.....	1 heaping sauce dish	Spinach.....	1 full sauce dish
Cauliflower.....	1 full sauce dish	Squash, summer.....	1 sauce dish
Celery.....	5 stalks	Tomato, fresh.....	1 medium
Cucumbers, medium.....	1 $\frac{1}{2}$	Tomato juice.....	$\frac{1}{2}$ cup
Eggplant.....	1 sauce dish	Tomato, stewed.....	1 full sauce dish

10% VEGETABLES

Each of the following servings contain about 10 grams of carbohydrate, equal to the amount in 2 lumps of sugar.

Beans, string, fresh.....	1 full sauce dish	Parsnips.....	1 scant sauce dish
Beets.....	2 medium	Peas, canned.....	1 scant sauce dish
Brussels sprouts.....	10-11 average	Peas, fresh.....	1 scant sauce dish
Carrots.....	1 large	Pumpkin.....	1 sauce dish
Dandelion greens.....	1 sauce dish	Squash, Hubbard.....	1 sauce dish
Okra.....	13 pods	Turnip.....	1 sauce dish
Onions.....	2 small		

Form 142A-5M

Boston Dispensary Food Clinic

cent" vegetable and none of a "5 per cent" vegetable (see above).

Wax models of foods and lumps of sugar are effective visual aids with which to demonstrate carbohydrate content. A rough sketch of a food with the lumps of sugar that indicate its carbohydrate content is often sufficient for the purpose. Posters designed to show amounts of foods that are equivalent in their content of a particular food constituent are especially helpful in teaching a group.

The *protein* content of foods equivalent in protein is explained to the patient in terms of the amount present in one ounce of meat (p. 53). The protein foods most commonly used have been discussed in detail under meat exchanges (page 54). The patient is shown that although milk and cheese contain additional fat, he may substitute them for meat if he omits one teaspoon of butter from his diet for each cup of milk. He sees that if he uses as a substitute any of the legumes, all of which contain liberal amounts of carbo-

hydrate, he must omit from his diet one small potato or its equivalent and add one teaspoon of butter to supply the fat in which legumes are lacking.

The *fat* in foods is stated in terms of the amount equivalent to one teaspoon of butter (Table 32). The importance of butter as a source of vitamin A, as well as of fat, is stressed to the patient. He is shown that since the other fats, except cream and fortified margarines, are not good sources of vitamin A, the use of many of these exchanges is dependent upon the presence in the diet of liberal amounts of milk or other foods which are excellent sources of this vitamin.

The *calcium* in various foods that are equivalent with respect to calcium is given in terms of the amount of it present in two tablespoons of milk (Table 35). The contrast of this small amount of milk with the large quantities of other foods, except cheese, that must be used to supply the same amount of calcium, helps to emphasize to the patient the

ONE OF A SERIES OF PICTURE SHEETS FOR EACH OF THE FOOD CONSTITUENTS USED WITH AND DISTRIBUTED TO THE PATIENTS

CARBOHYDRATE (Starch and Sugar)

Carbohydrate (Starch and Sugar)
Provides energy for work and play.





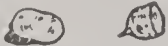






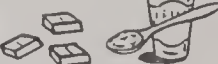
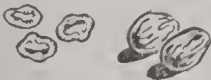


Carbohydrate (Starch and Sugar) is found in —
Bread
Cereals
Crackers
Macaroni
Potatoes
Dried peas and beans
Flour
Rice
Vegetables
Fruits
Fruit juices
“Sweets” such as sugar, candy, jelly, honey
Desserts such as cake, pie, cookies
Tonics or pop

Carbohydrate is measured in grams (30 grams = 1 ounce)

Daily Requirement of Carbohydrate Measured in Grams

Adults.....	4-6 grams for each kilogram (2.2 pounds) of average body weight
Children: 1-3 years.....	10-14 grams for each kilogram (2.2 pounds) of average body weight
4-6 years.....	8-12 grams for each kilogram (2.2 pounds) of average body weight
7-12 years.....	6-10 grams for each kilogram (2.2 pounds) of average body weight
Girls and boys: 13-20 years..	6-8 grams for each kilogram (2.2 pounds) of average body weight

Below are pictures of important food sources of carbohydrate and the number of *grams* of carbohydrate contained in the amounts of the foods shown. Write in the blank space the amounts of these foods you eat in a day, with the number of grams of carbohydrate beside them. Add the figures and see if you get the number of grams you require.

<p>1 small orange 1 cup, scant orange juice</p>  <p>10 grams 10</p>	<p>1 large carrot</p>  <p>10 grams</p>	<p>1 potato 1 very small white 1 small sweet</p>  <p>15 grams 15</p>	<p>1 slice bread white whole wheat rye</p>  <p>15 grams 15 grams 15 grams</p>	<p>1 piece cake 1" x 3" x 2" 1 scant sauce dish Jello</p>  <p>15 grams 15</p>
<p>1/2 large apple 1/2 medium banana</p>  <p>10 grams 10</p>	<p>1 scant sauce dish peas</p>  <p>10 grams</p>	<p>2 rounded tablespoons baked beans</p>  <p>15 grams</p>	<p>crackers 2 graham 3 1/2 uneneas</p>  <p>15 grams 15</p>	<p>3 lumps sugar 1 tablespoon jelly or jam</p>  <p>15 grams 15</p>
<p>2-3 halves apricots, dried 2 small prunes</p>  <p>10 grams 10</p>	<p>corn 1 small car 1 saucedish canned</p>  <p>15 grams 15</p>	<p>1 saucedish rice cooked macaroni cooked</p>  <p>15 grams 15</p>	<p>Amounts of Foods </p>	

importance of milk in the diet. This is further demonstrated with various combinations of foods necessary to supply a day's requirement of calcium for the adult and the child (Table 36), showing that when the amounts of milk and cheese are reduced to the minimum, larger quantities of other foods must be used. Vegetables and fruits vary so widely in calcium content that it is advisable to list them according to the relative value of the average serving (Table 34). This is also a convenience when making a selection of vegetables and fruits according to their calcium content.

The *phosphorus* content of various foods that are equivalent in respect to phosphorus is stated in terms of the amount of it present in four tablespoons of milk. As with calcium, various combinations of foods supplying the day's requirement of phosphorus are given, and the vegetables and fruits are arranged according to the relative value of the average servings as sources of phosphorus (Tables 37-39).

The *iron* in various foods that are equivalent in their content of iron is stated in terms of the amount of it present in one egg (Table 41).

The actual amounts of the various minerals needed daily should be demonstrated in terms of the foods necessary to obtain them, if the patient is to see how the requirements can be secured. This is particularly true in the case of iron. Because the amount of it contained in a single food is infinitesimal, the requirement has to be obtained from many foods; whereas the calcium requirement can be fulfilled with a single food,—milk. While the egg is an excellent source of iron, it can contribute but an eighth to a tenth of the day's need. A chart showing the egg, and foods that are equivalent to it in iron, will help the patient to visualize

the sources from which he must obtain eight to ten times the amount of iron supplied by the egg, to meet the day's requirement. For example, the chart will show that 2 slices of whole grain bread will give another eighth of the amount of iron needed, and that meat and certain vegetables and fruit will make important contributions.

Various combinations of foods are given that may be used toward supplying the day's requirement of iron (Table 42). To help the patient further, vegetables and fruits are listed in terms of the relative values of average servings as sources of iron (Table 40).

Vitamin exchanges are taught the patient on the basis of the recommended allowances of the Food and Nutrition Board of the National Research Council (Table 2). The protective diet (Part I, Chapter 2) can be reviewed in terms of its vitamin content, and the chart (p. 51) with columns of foods arranged under the headings of the various vitamins, will help the patient to visualize the foods supplying each vitamin, and also the fact that certain foods supply several vitamins. The patient is also given both printed lists of vitamin exchanges and picture sheets (p. 63), that he may evaluate the vitamin content of his diet (Tables 47-51). Inasmuch as a great deal of consideration is given now to the conservation of vitamins and minerals, the patient also receives data on this subject in chart form which can easily be remembered (p. 65). The patient should understand that food sources of vitamin D are so limited they need to be supplemented by sunlight or the "sun lamp," by medication, or vitamin D milk.

A "*Meal Plan for the Day*" is given to patients who wish more definite directions for combining into meals the foods listed in "Food for the Day." Such a

CONSERVATION OF VITAMINS AND MINERALS IN THE STORAGE AND PREPARATION OF FOOD

		Foods Rich in Vitamins and Minerals					
Factors Affecting the Loss of Vitamins and Minerals	Ways to Prevent the Loss of Vitamins and Minerals	Vitamin A	Ascorbic Acid	Thiamine	Riboflavin	Calcium	Iron
STORAGE	Keep vegetables in cool, moist place to prevent wilting and drying.						
OXIDATION	Avoid bruising fruits and vegetables to avoid exposure to air. Avoid stirring foods when hot. Cut fruits and vegetables when possible just before serving. Do not defrost frozen foods before cooking. Cook foods with skins on when possible.	Fruits Vegetables	Fruits Potato Vegetables				
ALKALINITY	Do not add soda to water in which food is cooked.						
HEAT	Cook as short a time as possible. Have water boiling when food is added. Use lowest heat possible.			Fruits Meat Milk Potato Vegetables	Fruits Meat Milk Potato Vegetables		
SOLUBILITY IN WATER	Use small amount of water when cooking fruits and vegetables. Use this water. Wash foods but do not soak.					Fruits Potato Vegetables	Fruits Meat Potato Vegetables

plan is helpful also to those who have difficulty in arranging meals of the kind to which they are accustomed from the amounts and kinds of foods allowed in the diet. It is given in skeletal form to show the patient how he can utilize all the foods, how he can vary his meals by the use of exchanges and recipes, and how the diet can be adapted to the usual routine of his meals—whether he has them with his family or group, or prepares them himself or eats in the restaurant.

The *selection of food in the restaurant* makes a knowledge of the ingredients of made dishes especially important, because so many of the dishes served are combinations of foods. Furthermore, in order to help the patient to make the necessary adaptations the amount of money he has to spend for food must be known, as well as the differences in the type of food served in the various restaurants in which he eats, and the difference in cost.

Recipes are given. With the list of foods for the day, and exchanges, many patients ask how they may combine these foods, or whether they may use the combinations or “made dishes” to which they are accustomed. One must have a knowledge of the ingredients of these typical dishes of the foreign-born groups to be able to show the patient how he may include them in his diet. The patients themselves will often furnish recipes, or

these may be obtained from books on foreign cookery or from restaurants that serve these dishes, and much information can be gleaned from visits to the small grocery stores and bakeries in the neighborhood of the foreign born.

Nationality influences the method of teaching food exchanges to the foreign-born patient. With respect to the varied use of cereals by different nationalities, for example, it should be remembered that while the American uses many kinds, with milk and sugar, chiefly as breakfast dishes, the Italian uses spaghetti with tomatoes and other vegetables, and with meat and cheese; the Jew has oatmeal or farina for breakfast, and noodles, barley or buckwheat in soups; while the Near Easterner uses cracked wheat or rice in combination with meat or nuts and vegetables. Bread is baked in such various shapes and sizes by the foreign peoples that it is difficult to visualize to the foreign-born patient a piece of bread equivalent to the average slice of American bread except by weighing it.

Exhibits: Exhibits are one of the most helpful educational tools to use as a means of guidance and interpretation of food treatment. They are valuable not only for patients who come to the Food Clinic, but for those who walk through the corridors or sit on the benches. Simple nutritional facts can be taught through the medium of the exhibit.

CHAPTER 6

THE EDUCATION OF THE PATIENT ON THE THERAPEUTIC DIET

THE THERAPEUTIC DIET

It is important that the patient on a therapeutic diet shall understand the modification of his diet from the normal and the reason for the modification.

The general procedure used in teaching the principles of the therapeutic diet is the same as that for the normal diet. As with the latter the patient must know the relation of food to the body, the body needs in terms of the food constituents and the foods that supply them. The therapeutic diet must fulfill the normal needs of the body, but with a modification of the food constituents or foods, or of both, that will help to compensate for the dysfunction of the body part affected.

THE MODIFICATION OF THE NORMAL DIET

It has been noted that the modification of the normal diet may consist in one or a combination of the following procedures:

Food constituents,—increase or decrease in amounts;

Foods,—increase or decrease in kinds and amounts,

the omission of certain foods,

a change in the consistency of foods,

a change in method of preparation of foods;

Meals,—a rearrangement of the number and frequency of meals and feedings.

Frequently such modifications and restrictions make more difficult the choice of food sufficient in kinds and amounts to provide an adequate diet, and the patient may need special help and direction in this respect.

PROCEDURE IN TEACHING THE PATIENT

The *physiology of the body part* affected is illustrated for the patient by charts and drawings or pictures, and its normal function in relation to food is demonstrated with simple analogies. Its *pathology* is shown by pictures when possible. With an understanding of both the normal function and the dysfunction in relation to food, the patient can be led to see how his diet must be modified.

Dietary directions follow the same procedure as for the normal diet, and the same educational materials are used.

A list of "*Food for the Day*" with exchanges is given the patient, the emphasis being placed on exchanges stated in terms of the food constituents that must be increased or decreased in amounts, according to the disease or condition.

A "*Meal Plan for the Day*" will help him to adapt the foods allowed in the diet to his usual routine of meals, with consideration given, if need be, to the consistency and method of preparation of food.

Recipes which use only the foods allowed and in the amounts prescribed by the diet are of great value to the patient.

Demonstrations are arranged for special occasions, such as holidays, to show the patient how he may participate in the family's celebration without exceeding the limits of his diet.

THE APPLICATION OF THIS PROCEDURE TO SPECIFIC DISEASES

The methods used in teaching the patient on a therapeutic diet are best illus-

trated by showing how they are applied to specific diseases.

Diabetes is usually a familiar term and the patient sometimes speaks of it as "sugar sickness."

The *body part affected* is shown by means of a picture of the pancreas (the Islands of Langerhans), and from a manikin or diagrammatic chart the patient sees its location in the body.

Its *physiology* is explained in simple terms,—its function is to secrete a "juice"—insulin—which is necessary to utilize or "burn" the sugar from food.

The word "sugar" must be interpreted, for the patient usually thinks of the sugar in the sugar bowl and believes firmly that he takes but little. He knows, from household experience, that sugar can be dissolved in water, and starch cannot. He is led to understand, then, that before the starch in bread, cereals, potatoes, vegetables and some fruits can be utilized by the body, it must be changed to sugar by digestive processes. He is taught that carbohydrate is the name given to the starches and sugars in food. He learns, furthermore, that such foods as meat, eggs, cheese, and even fat, are also sources of some sugar when digested or used in the body.

The *pathology* of the pancreas is explained to the patient,—in a diabetic the pancreas secretes less insulin than is normal. Hence the sugar that the patient obtains from his food is not completely burned and the amount present in the body is in excess of normal. With a diagrammatic chart the patient can be shown that a part of the excess accumulates in the blood, and that when the sugar in the blood goes above a certain amount it "spills over" and is excreted in the urine.

If the patient shows the classical symptoms of diabetes, such as thirst, frequent

urination, itching, excessive appetite or loss of weight, these can be used to explain how diabetes is affecting the body. It is explained that as a result of his thirst, he drinks large amounts of fluid and, therefore, needs to urinate frequently. He is told that the itching is due to the presence of excess sugar and when he has less sugar there will be little or no itching. His hunger and loss of weight, it is explained, are due to the fact that the body does not get the full value of the food eaten, since part of it is lost as sugar in the urine.

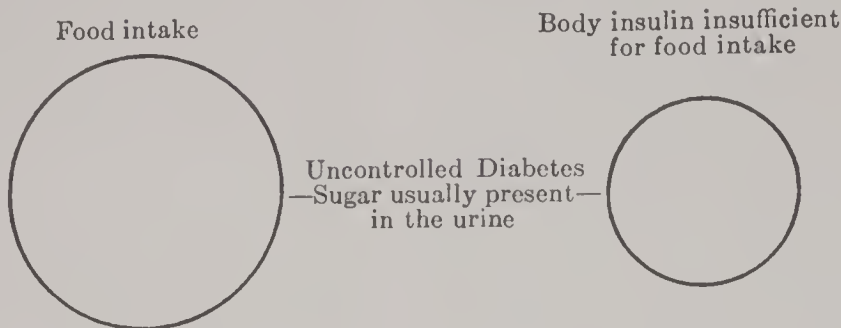
Laboratory tests are means of showing the patient that the amount of sugar in the blood and the amount excreted in the urine are indices of his condition, and that from these is determined his "sugar tolerance." Sugar tolerance is explained as being the amount of carbohydrate (sugar and starch) that he can use or tolerate so that there will be little or no sugar in the urine, and the level of sugar in the blood will be within limits of safety. Realizing the significance of an examination of the blood, the patient's fear and aversion to the procedure is somewhat diminished.

The *terminology* used with the patient should be understood by him, and many expressions that are employed easily and fluently in teaching must be interpreted. "Sugar tolerance," just defined, is one of these, and another is "sugar free," which is explained by showing the patient several samples of tested urine that contain varying amounts of sugar and contrasting these with a sample that contains no sugar and is said to be "sugar free."

Patients often color diagrams or drawings of test tubes to illustrate the test for the presence of sugar in the urine. They learn that blue indicates no sugar; green, a slight trace of it; yellow or yellow-green, about 1 per cent sugar; orange,

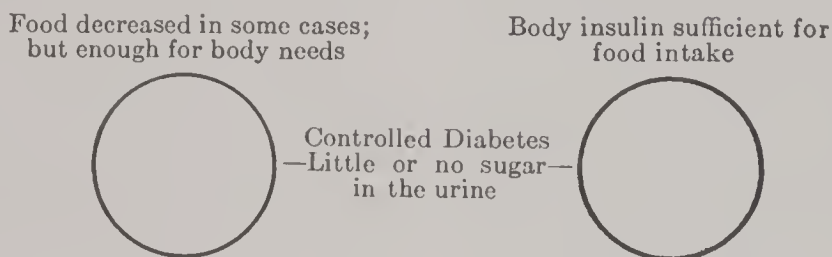
about 1.5 per cent sugar; and red or reddish-brown, about 2 per cent sugar—an excessive amount.

The *interdependence of diet and insulin* is illustrated by diagrams such as the following:



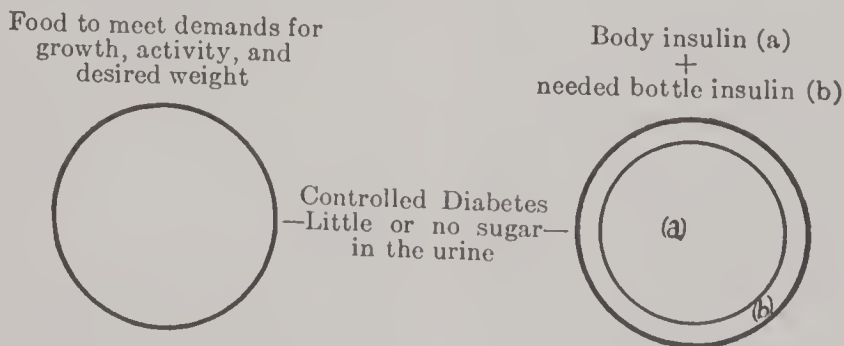
It is explained to the patient that in diabetes the supply of insulin is inadequate and as a result, sugar cannot be used by the body and accumulates in the blood stream and other parts of the body and then is excreted in the urine.

He sees, therefore, that to control diabetes the food intake must be reduced, and that the diabetes can be controlled as long as he maintains this balance between food and insulin.



He is shown, further, that if the amount of insulin in his body (a) is not sufficient to take care of the food required for body needs, he must supplement his body in-

sulin with "bottle" insulin (b) to allow an adequate food intake and at the same time control the diabetes.



Dietary directions are given to help the patient in the choice of foods he should make. The method of teaching is that used in the case of the normal diet; for

the patient needs to know the normal body requirements in terms of food constituents, the foods that supply them, and in addition how, in diabetes, the food

must be restricted or limited to meet the dysfunction of the body part affected, the pancreas. The reason for having food before bedtime is explained to the patient taking protamine zinc insulin.

The *measurement of food* is important in diabetes, and the sizes of the servings that the diabetic patient is to use are demonstrated to him with food models. These models, made of wax, are invaluable as a method of teaching amounts of foods by visual means to be sure that the patient will estimate his servings correctly. This method of teaching makes the use of scales unnecessary, and allows the patient to follow a more nearly normal regime of living. Frequent review of the diet in terms of what he is eating is necessary to make sure that he is following it accurately. During these conferences the patient himself often gives helpful suggestions as to varying the diet.

The *foods to be used* are written on the list, "Food for the Day," and exchanges are given, especially with respect to carbohydrate in which the diabetic diet must be restricted, and in terms of fat when that also is to be reduced. That the diet requires special foods and specially planned meals, as so many believe, is shown to be a fallacy. The patient learns, instead, that he can readily adapt his diet to the family life, with little modification or change. Points where the patient may need special help in adapting his diet should be recognized and should receive emphasis in teaching.

The patient learns that the diet for diabetes must not only supply adequate kinds and amounts of food to fulfill body needs, but must also be a means of maintaining the desired weight. It can be determined usually from his weight and by the urine analysis and the blood sugar test whether this diet is satisfactorily

adjusted to his sugar tolerance and if he is following it correctly.

The *record of the food intake* that the patient keeps during the interval between visits helps him to understand these findings and serves as a basis for a discussion of his food habits (Part I, Chapter 5).

The *urine analysis* for sugar places certain responsibilities on the patient. The patient is asked to bring with him, on each visit, a 24-hour specimen of the urine. Printed instructions are given for this procedure, with necessary explanation. In some instances the meaning of the 24-hour period needs to be demonstrated, with a clock or picture of one, as being the time the hands take to move twice around the clock. A clean bottle given to the patient on the first visit is a means of emphasizing to him that the container for the specimen should be free from other substances; and moreover it can be used to demonstrate the amount of urine that will be sufficient for the analysis. This helps also to emphasize the importance of the procedure of collecting the 24-hour specimen.

If the patient is to test the urine at home, each step of the procedure is explained to him, pictures of the procedure are shown to him, and he performs a test satisfactorily before leaving the clinic. He is given printed directions, both to help him to recall the procedure and to enable others at home to help him when necessary. Also he has a special form on which to record in color the results of the urine analysis (p. 71). The form indicates the times at which he is to make the test, and a space is provided for the results of all tests made during the interim between visits to the clinic. Also, he is given crayons with which to record as nearly as possible the color of the urine

reaction, having practiced in the clinic the selection of the correct colors. This record, being something that he can observe, indicates to him what his condition

FORM FOR RECORDING THE COLOR OF THE URINE TESTED AT HOME

COLORS OF URINE TESTS FOR SUGAR				
Name		B. D. No.		Date
Insulin—U		Dose		
Days	Night Time to Before Breakfast	After Breakfast to Before Noon Meal	After Noon Meal to Before Night Meal	After Night Meal to Bedtime

Form 125

is. He is told that the result of a urine test which is yellow in color touches the danger line and may indicate a maladjustment between diet and insulin. Such a record of the urine reactions between visits also visualizes to the physician

the amount of sugar present in the urine during this period and is a guide to him in treatment. Moreover, the patient soon realizes that if he does not state his food intake correctly the urine analysis will probably indicate it, and consequently he discusses more frankly the circumstances when, for some reason, he has not adhered to his diet.

The *administration of insulin* should be learned by the patient so that he need be dependent on no one except in unusual circumstances. He should learn in the clinic to administer insulin to himself properly and with confidence, before he does it at home. In teaching the administration of insulin the patient is first shown a series of photographs illustrating each step in the procedure. When instructing the patient the pictures can be referred to as each step is taken.

It sometimes takes infinite patience to overcome aversion to the procedure, fear of the prick of the needle and self-consciousness concerning lack of skill. Great care is taken to teach him the necessity of sterilizing the syringe, the needle and the top of the insulin bottle, and of strict cleanliness of the hands, and of the flesh at the site of injection of the needle. Some other member of the household should be able to administer insulin to the patient, in case of emergency.

The type of insulin syringe used should be of simple construction, with as few figures as possible, and a diagram of the syringe on which is plainly indicated the amount of dosage, with the time at which it is to be taken, helps the patient to carry out the procedure correctly.

The symptoms of an insulin reaction are explained to the patient in simple terms so that he will recognize them if they occur; and his fear of a reaction is allayed when he learns that he can easily

counteract it by taking some form of concentrated carbohydrate such as sweetened fruit juice, sugar or candy. Emphasis is placed on the use of food before bedtime so that there will be sufficient food to balance the amount of insulin in case of a delayed utilization of the insulin. As a further precaution, and as a means of reassuring him, he is given an identification card to carry. Besides his name and address, it states his diet and insulin prescription and from whom he is receiving medical treatment.

Environmental factors that affect the diet must be considered in the therapeutic diet as well as in the normal. Most important are those factors that influence the habits of hygiene, both physical and mental, and special emphasis should be placed on means and facilities for developing good habits of personal hygiene.

Books,¹ pamphlets, pictures and exhibits can be used in teaching the patient, so that he can acquire a better understanding of his disease and its treatment.

Peptic ulcer will be used to illustrate further the procedure in teaching the patient on a therapeutic diet, since this condition requires not only an increase above the normal in the amount of a food constituent,—in this case, fat,—but also a change in the consistency of foods.

The *body part affected* is illustrated by means of pictures and charts of the gastrointestinal tract, and the patient is helped to understand the normal condition of the lining of the stomach and how the presence of ulcer causes dysfunction of the stomach or intestine.

Dietary directions are given. To help the patient to realize the reason for his discomfort the ulcer may be likened to a sore. He is accustomed to treat a sore

on his body, and knows that acid, touching it, causes it to sting, and he understands that the ulcer would be irritated by the same means. He is told that there are two sources of acid that may affect the ulcer: the accumulation of the gastric juice and the acid-tasting foods. It is clear to him that the latter should be generally avoided. However, orange juice, strained and diluted and taken after other food, is usually tolerated. He is shown that the irritation can be lessened by eating, at frequent and regular intervals, food with which the hydrochloric acid combines readily, such as milk; and further, that the secretion of hydrochloric acid can be decreased by the use of large amounts of fat, and by avoiding foods that stimulate its flow, such as meat, meat broths and gravies and other foods. This helps him to understand why milk and cream are so important and satisfactory in the treatment of ulcer.

Carrying further the analogy between the ulcer and a sore, the patient will understand that the consistency of the foods that come in contact with the ulcer should be like a salve—smooth and soothing. He is told that the stomach has certain movements for “churning” and “grinding” food, which are a part of the process of digestion. He readily sees that giving food of a soft, smooth consistency decreases the work of the stomach because the food preparation has been carried on outside the stomach. Further, he is led to see that meat contains fiber that requires “grinding” by the stomach, and that for this reason and because it stimulates the flow of the hydrochloric acid it must be omitted from the diet until the ulcer heals.

The strainer or sieve is at hand to show that only such foods as can go through the fine meshes should be used. Samples of strained foods—vegetables, cereals, and

¹ “*Diabetic Care in Pictures*,” Rosenthal, Stern and Rosenthal, J. B. Lippincott Company, July, 1947.

fruits,—especially those in glass containers in which the food can be seen, are valuable in helping to explain fiber, cellulose and roughage, and to visualize the right consistency. It is helpful to give the patient samples to take home to guide him in the preparation of the food, especially if another person, to whom he must explain the instructions, prepares the diet. The diagram of the whole grain (Part I, Chapter 5, p. 57) will show the patient why the refined cereals are used in this diet, and that enriched white bread is preferable to whole grain bread because it contains no roughage.

It is especially important in this diet not only to give a list of "Food for the Day" but also a "Meal Plan for the Day," in order to stress the regularity of the meals and feedings and the amounts of food that should be taken at one time. Foods that should be avoided because of their harmful effect on the ulcer are listed for the patient, and recipes may be given him, especially for preparations of milk, eggs and cereals. Exchanges give variety to the diet, but the choice of foods should be made with great care as the treatment limits foods containing certain vitamins and minerals. The record which the patient keeps of his food intake will help him to evaluate the effects of the diet in the improvement of his condition and will demonstrate the importance of adhering to it strictly. It will serve also as a basis for discussion of the principles of the treatment (Part I, Chapter 5).

Food allergy has been chosen as another illustration of the procedure used in teaching the patient, since it requires the omission of certain foods from the diet, although the food constituents are given in normal amounts.

The *physiology and pathology* of the body part affected cannot be explained

and visualized so easily in food allergy as in other diseases; for it is difficult for the patient to understand the antagonism existing between antibodies in the body cells and the allergens of foods.

Dietary directions: The word "allergy" is usually new to the patient and should be spoken frequently and written several times. As in the normal diet the patient is shown by pictures how the body builds its own substance by transference to itself of like materials from food. It is explained to him, further, that sometimes certain foods are resisted by the body cells, which act against them, and symptoms such as those of which he complains are evidence that this is happening. Frequently a patient has found from his own observations that eating certain foods produced certain symptoms. In this connection the words "sensitive" and "allergic" may be introduced, and the patient understands that he is sensitive or allergic to those foods and must omit them from his diet because they produce the symptoms with which he is familiar and which indicate a disturbance in the body. Usually he asks whether he will ever again be able to eat these foods. He is told that when he has been free from symptoms for a long period he may take the foods again, one at a time, and in small amounts at first, to see if the body can tolerate them; that if any of the symptoms reappear the offending foods must again be immediately omitted; and that if the foods are tolerated, the amounts taken may be increased gradually until they assume their usual place in the diet. It is explained that when he is able to take these foods freely without symptoms, he has become "desensitized."

The word "tolerance" needs explanation. When the patient can take the foods to which he has been sensitive and

show no symptoms, he is said to have gained a tolerance for them.

The *foods used* by the patient must meet the requirements of an adequate diet. If certain foods have to be omitted from the diet, the patient understands that foods must be substituted to supply equal amounts of the food constituents, or medication must be prescribed.

Just as in the case of the normal diet, the patient must know the body needs and the values of different foods as sources of the food constituents required to fulfill these needs. If foods important to the adequacy of the diet must be omitted, the patient should know what food constituents they contribute to be able to select foods to replace them. Care must be taken in the choice of exchanges so that the patient will not make the error of choosing another food to which he is sensitive.

The patient is led to see, for example, that if he cannot take milk, the protein, calcium, phosphorus, vitamin A, thiamine and riboflavin that it contributes must be supplied by other foods, and that to ensure right amounts of vitamin D, sunlight and medication must be provided. He is then guided in the selection of exchanges for milk. He sees that cheese makes a good substitute, when allowed, since one ounce equals one cup of milk in all the food constituents except carbohydrate, thiamine, riboflavin, and niacin. He finds that there is no other practical substitute than cheese in terms of calcium and it may be necessary, therefore, to have medication. The protein may be supplied by meat, fish or poultry of the kinds to which he is not sensitive. He may use eggs to provide protein and vitamin A, thiamine and riboflavin. Or vitamin A may be supplied by butter or fortified oleomargarine. In looking for other sources of the vitamins, he finds

that whole grain bread and cereals are valuable for thiamine, riboflavin and niacin, and the enriched bread for thiamine and niacin, and by choosing the kinds to which he is not allergic he may use them. Otherwise, he will have to depend for these vitamins upon the legumes, vegetables and fruits to which he is not sensitive—and these will also help to supply carbohydrate and minerals.

Foods to avoid are remembered with the help of a list of the foods that the patient is "*Not to Eat*." Special emphasis is placed on the "hidden" foods; that is, foods to which the patient is sensitive but whose presence in a "made dish," or in certain foods purchased—as cereals, breads, oils, mayonnaise and others—is not evident and is not indicated by the trade name. Lists of these foods are given the patient,—for example, foods in which the egg is used, as certain sauces, breads, cakes, desserts and salad dressings. Samples of various foods should be available, especially samples of the "hidden" foods and foods less familiar to the average patient, to help to demonstrate to him what he may and may not eat.

"*Food for the Day*" is given in kinds and amounts of food that the patient can eat, with lists of exchanges and recipes to help him in choosing a diet sufficiently varied to satisfy his desires. Great care must be used, in giving exchanges, to be sure that when substitutions are made sufficient amounts of all the food constituents are present in the diet for the day. The patient is shown that to make the diet adequate he may have to eat larger than average servings of certain foods used as substitutes, because they contain the desired food constituents in smaller quantities.

Recipes using only the foods to which he is not sensitive are given to the patient to help him in the preparation of the diet

and to gain his adherence to it. For example, when wheat is omitted, it is difficult to make a bread that is satisfactory to the patient because the flours from other cereals do not produce a good raised bread, and he does not easily become accustomed to bread made with baking powder or soda. Therefore, recipes are given for breads using flours and cereals to which he is not sensitive, and which usually must be prepared at home because they can rarely be purchased. Frequently a patient will omit bread prepared from the flours that are allowed him because he lacks the facilities or the inclination to prepare it. Suggestions for ways of using and preparing cereals are given to encourage him to use them. Also recipes for foods unfamiliar to him will sometimes help to encourage him to include them in the diet.

The *cost of the diet* may have to be increased when several of the more commonly used and cheaper foods must be omitted and it then becomes necessary to use the more expensive foods. Under such circumstances, in order to ensure the

diet, it must be known whether the income will permit the purchase of these foods, especially when the diet is inadequate without them.

A *record of the food intake* (Food Diary) should be kept by the patient, and he should note any symptoms and the time at which they appear. This helps him to realize the importance of following his diet exactly. It helps also to estimate more accurately how well he understands the diet and how faithful he is in adhering to it (Part I, Chapter 5, p. 48).

Contributing factors, other than food, with which the patient makes contact within or without the home, often cause or intensify symptoms. These must also be listed for him. The patient is asked, in his turn, to record with his food intake the circumstances under which symptoms occur. To assist him further to recognize environmental contacts to which he may be allergic, he is asked to make an inventory of the contents of the rooms or places in which he works, eats, sleeps, and plays, and this is closely studied in conference with him.

PART II

TABLES TO SIMPLIFY THE COMPUTATION OF THE DIET

FOREWORD

The tables assembled here will aid in the computation of diets. They can be used independently of the text, just as the engineer refers to tables of figures for help in solving his problems.

The first three of these tables furnish data fundamental in planning and computing diets. In Table 1 are listed the elements of which the body is composed, the substances that are present in food and the purpose of each of these food constituents in relation to body needs, and in the last column the foods that are sources of these food constituents. Reading from left to right on this page, one will see the composition of the body, the food constituents of like substances, and the foods that supply these substances. Or if one would wish to read from right to left in the evaluation of a food there would be found a list of foods supplying the various food constituents, the value of these foods in serving the body and the like substances in the body which they supply.

Table 2 gives the recommended daily allowances of each food constituent, for adults and for children.

Table 3 lists again the foods that are principal sources of the various food constituents, but in more complete form than in Table 1. Here the foods are grouped in columns under the names of the food constituents they contain, and arranged in such a way that a glance will show the values of particular foods in

terms of the number of the food constituents they supply.

Throughout the world people use the same types of food, according to their availability,—breads and cereals, milk and milk products, eggs, meat and fish, vegetables and fruit. These foods differ in kind and in usage, in different countries, under the influence of geography, climate, history, transportation and technological progress of the country. But wherever physical and mental efficiency are maintained, it will be found that people have intuitively, through the ages, adopted a diet and dietary customs that provide sufficient amounts of the food constituents, in accordance with the standards given in these tables. Racial diets and food habits are described briefly in Table 4.

Sex, weight, height, age and activity need to be known to determine the dietary requirements. Therefore Tables 5-17 give weight-height-age measurements and energy requirements for the adult and for the child.

Tables 18-21 give abbreviations, and weights and measures of various units, to interpret data used throughout the book.

In the table of "Food Values and Measures in Terms of Average Servings of Food" (Table 22), average servings are given both in grams and household measures. The amounts given for household measures are approximate measurements. They have proved advisable as the patient

can easily comprehend them and they more nearly represent his practice in the purchase and serving of foods. The figures for the amounts of the food constituents have been secured from authoritative sources; but it is well understood that they represent proximate analyses. The food values stated may not represent the exact composition of foods, because of certain errors that are inevitable in the analytical methods commonly used.¹ It is to be remembered also that foods are subject to natural variations in composition, the causes and extent of which are only just beginning to be investigated with adequate thoroughness.²

Nevertheless the great value of these data has been successfully demonstrated in the experience of many years. For more than a quarter of a century the tables of Atwater and Bryant have been recognized as the great scientific contribution to dietetics.³ In determining the figures for protein for practical use, these investigators accepted nitrogen as present in foods to the extent of 16 per cent of all proteins. On this authority the factor 6.25 has been used for the conversion of nitrogen to protein ($N \times 6.25$). But it was recognized that this value, designated as "total protein," is subject to two types of error. In the first place, all foods contain varying amounts of nitrogenous bodies that are not protein, as Atwater and Bryant pointed out; and further it cannot be assumed at the present time

that all proteins contain 16 per cent nitrogen. In experiments with a few foods, Jones determined the correct figures for the proteins and showed that the nitrogen present varied from 13 per cent to 19 per cent.⁴ In regard to these findings, Newburgh writes:

"Since the magnitude of the first source of error, that is the per cent of nitrogen in non-protein forms, is known only for a few foods, these new factors cannot yet be successfully applied often enough to justify a change in the values for protein now in common use."⁵

"Many instances in which chemical studies of the amino-acid composition of a protein were correlated with nutritional studies of its effectiveness in meeting the body's protein requirement have shown clearly that the nutritive values of the food proteins depend essentially upon the kind of amino acid radicles which they contain and the quantitative proportion of each. As yet, however, methods for detection and determination of the individual amino acids are still being developed."⁶

In the determination of the total fat in foods, both fat, and the fat-like substances extracted at the same time, are included. Newburgh makes allowance for this by using in his tables the inclusive term "lipids." In most analyses of foods the fat-like substances are usually insignificant. Until more exact estimates are reached the present analyses can be used and interpreted as total fat, and the error can be considered negligible.

The earlier tables stated the figures for carbohydrate obtained "by difference,"

¹ This does not hold in the field of research, where accuracy of figures is demanded for satisfactory results, and the foods used in experimental amounts are carefully analyzed for their exact values.

² Sherman, *Chemistry of Food and Nutrition*, 7th ed., p. 561, Macmillan Co., 1946.

³ For a detailed description and discussion of the analytical methods on which these tables are based, see Circular 549, U. S. Dept. of Agriculture

⁴ Circular 183, U. S. Dept. of Agriculture, 1931.

⁵ Newburgh and Mackinnon, *The Practice of Dietetics*, p. 100, Macmillan Co., 1934.

⁶ Sherman, *Chemistry of Food and Nutrition*, 7th ed., p. 65, Macmillan Co., 1946.

—by adding the analytical data for water, fat, protein and ash and subtracting the sum from 100, assuming the remainder to be carbohydrate. This method is characterized by Newburgh as including “the sum of all the errors.” More recent tables record the carbohydrate of foods as that which remains after subtraction of the fiber, and classify the results as “nitrogen-free extract,” a designation which Mendel says merely cloaks our ignorance.⁷ However, the figures for carbohydrate in Table of Food Values and Measures (p. 104) were based on sources which did not use this method for estimating the carbohydrate content of foods. Rather, they have used “total carbohydrate” or, as previously stated, “carbohydrate by difference.” McCance and Widdowson⁸, of Great Britain have examined many foods to determine the percentage of available carbohydrate, and have published the results. While recognizing that these values represent a distinct advance in the direction of greater accuracy in food analyses, yet because their averages are based on foods not grown, for the most part, in the soil of this country (U.S.A.), it has seemed best to incorporate only a few of them in the Table of Food Values and Measures. More will be found in part, however, in a separate table (Table 27).

It is well to be aware of these facts, and at the same time to realize that they do not detract from the usefulness of these figures in the construction of a diet.⁹ The range of error is slight in most cases and

in many instances works out favorably to the patient. In certain therapeutic diets the patient will usually receive somewhat less protein, fat or carbohydrate than the tables predict. Where total quantity is important, as with underweight individuals, an extra allowance can be made.

Scientific research is constantly adding to the knowledge of the content of minerals and vitamins in foods, and the latest results of analyses are used. Only the vitamins that are concerned with food are given. One must follow the literature for information about pyridoxine, pantothenic acid and other vitamins.

“Suggestions for Ways of Using Foods in the Diet” are to be found in Tables 23 and 24. And in order to evaluate a combination of foods, such as in cake or pie, there is a table of directions for computing the food value of recipes (Table 25).

Because of the need for varying the diet, there are tables showing foods of equivalent value in terms of a food constituent—carbohydrate, protein, fat, calcium, phosphorus, iron and vitamins (Tables 26 to 51). Food exchanges should be known, in order to make the patient’s diet flexible and give it variety within the limitations prescribed. In thinking of one food constituent it must be remembered that other food constituents should be considered (Chapter V).

Some of the tables have been given their particular form or content for special teaching purposes. In Table 36, for example, the purpose is to show that if sufficient milk, or its equivalent in cheese, is not supplied daily, the requirement of calcium cannot be met; for without milk or cheese the fulfillment of the calcium requirement would necessitate such large amounts of other foods containing calcium that the bulk in the diet would be abnormal and unsatisfac-

⁷ *The Challenge of Nutrition to the Chemist*, the Nucleus, Volume XI, No. 5, Northeastern Section of the American Chemical Society, Inc., February, 1934.

⁸ McCance and Widdowson, *The Chemical Composition of Foods*, Chemical Publishing Co., Inc., Brooklyn, N. Y. 1947.

⁹ Food and Agriculture Organization of the United Nations, “Energy-Yielding Components of Food and Computation of Calorie Values,” May, 1947.

tory. There are tables similarly planned with respect to fulfilling the day's requirement of iron and phosphorus (Tables 39 and 42).

In connection with other data, figures for acid ash-forming and alkaline ash-forming foods are given in separate tables, and the foods are listed in alphabetical order (Tables 52 and 53). To demonstrate that with the protective diet the acid-base balance need not be stressed, a table of average servings of some common foods has been arranged for comparison of their excess acid ash or excess alkaline ash. It can be clearly seen how the alkaline ash-forming foods, such as milk, potato, fruits and vegetables, neutralize the acid ash-forming foods such as meat, eggs and cereals; that is, a serving of meat will be balanced by a serving of vegetables such as carrots (Table 54).

No table for the content of fiber in foods has been included, as the figures of different analyses vary so widely. Authorities estimate that the requirement is approximately 6 grams per day. The fiber in foods,—seeds, skin, and pulp,—is so evident that the selection of foods without computing their fiber values has proven satisfactory in the practice of diet therapy.

The protective diet carries a margin of safety with respect to the normal requirement of fiber.

For the low residue diet, figures are not necessary, since its purpose is to eliminate as much of the fiber as possible. The needs of the low residue diet can be met with the use of strained foods, prepared commercially or at home (Table 61).

The high residue diet can be met by a liberal use of whole grain products, vegetables and fruits, especially dried fruits. If a diet higher in fiber than the

protective diet is desired, two more servings of vegetables and of fruits than the protective diet supplies will increase the residue to approximately one-third above the normal requirement.

To survey a diet and evaluate it roughly as to its contribution of fiber, the following averages, compiled from various authorities, may be helpful:

Vegetables, fresh fruits:

1 gram of fiber per 100 grams (average serving)

Dried fruits:

1.5 grams per 30 grams (average serving)

Whole grain bread and cereals:

0.5 gram per 30 grams (average serving)

Nuts:

0.5 gram per 30 grams

No table for iodine is included here. "The difficulty of quantitative determination of iodine in the extremely minute amounts in which it occurs in most plant and animal tissues must be expected to render somewhat slow and uncertain the working out of satisfactory data on the iodine values of foods and the quantitative requirements of the body for iodine at different ages and under different conditions."¹⁰ If the diet includes sea food, or foods grown in water or soil in which iodine is present, safety is assured. When conditions are such that the diet, including the drinking water, is deficient in iodine, medication is prescribed by the physician or public health authority. In communities where these conditions exist iodide has been added to the public water supply. Another method has been the addition of a small proportion of sodium iodide to the table salt intended for household use.

The purine and cholesterol contents of average servings of food are included in Tables 55 and 56. Sodium and potassium

¹⁰ Sherman, *Chemistry of Food and Nutrition*, 7th ed., p. 315, Macmillan Co., 1946.

are given in both Table 22 and Tables 45 and 46. Previously available tables have been compiled from data obtained from conventional methods of chemical analysis and traces of potassium tended to be weighed as sodium. The data contained in these tables were obtained by the flame photometry method as worked out at Mead Johnson and Company, Evansville, Indiana, and represents a new order of accuracy in figures for sodium and potassium.¹¹

To relate the findings of the physical examination, laboratory analyses, and diagnosis to the therapeutic diet, a table on certain physiological data is listed in Table 57.

The consideration of allergy by some authorities gives importance to the placing of a food in its biologic group. Arrangement of foods according to this grouping is shown in Table 58. Some authorities use the elimination diet, and

a table for this procedure is also included (Table 59).

There is a table for the ketogenic diet, for the relation of carbohydrate to fat (Table 60), and also a table of the Food Content of Diets Modified According to Consistency (Table 61). Another table shows the deviation from the normal diet for the overweight, underweight or normal weight diabetic patient, in grams of carbohydrate, protein and fat per kilogram of body weight (Table 62).

There are many variables that would militate against exactness in fulfilling the food requirement, even if accurate figures were available. For example, the out-patient is not under strict control, and there are chances for error in the possible waste of food or in inexact measurements, or in methods of preparation, that would alter the values of the food intake. The patient's condition in response to the diet must be the real test for adequacy, pointing to such adjustments in the amounts of food prescribed as may be needful to accomplish the desired results.

¹¹ Courtesy of Dr. Charles E. Bills, Research Director, Mead Johnson, and Company.

TABLE 1
THE RELATION OF FOOD TO THE BODY
(The Body as a Builder of Its Own Substance)

The Composition of the Body		Food Constituents that Supply the Body Needs for Building and Functioning	Foods that Supply Food Constituents for the Body Needs
Carbon	<div> <div>Water</div> <div>Carbohydrate and Fats</div> </div>	<p><i>Carbohydrate:</i> The primary source and most readily available form of energy. Stored in the body and may be transformed into fat.</p>	<p><i>Carbohydrate:</i> Bread, cereals, fruits, milk, sugar, vegetables.</p>
Hydrogen			
Oxygen			
	Protein	<p><i>Fat:</i> An additional source of energy; an essential constituent of body cells; chief form of food storage.</p>	<p><i>Fat:</i> Butter, cheese, cream, egg yolk, fats, meats, milk, nuts, oil, vegetable fats.</p>
Nitrogen		<p><i>Protein:</i> Primarily for growth and maintenance of body tissue and also a source of energy.</p>	<p><i>Protein:</i> Cereals, cheese, eggs, fish, legumes, meat, milk, nuts.</p>
Sulphur			<p><i>Sulphur:</i> Chiefly in protein foods.</p>
Iron	Minerals	<p><i>Iron:</i> The essential element in hemoglobin, the oxygen-carrying constituent of the blood.</p>	<p><i>Iron:</i> Beans (dried), cereals (whole grain or enriched), egg yolk, fruits (dried), meat (especially liver and kidney), molasses, vegetables (green).</p>
Calcium		<p><i>Calcium and Phosphorus:</i> Essential for growth and maintenance of the skeletal structure (bones and teeth),</p>	<p><i>Calcium and Phosphorus:</i> Cereals (whole grain), cheese, eggs, fruit, milk, nuts, vegetables.</p>
Phosphorus		<p><i>Calcium, Phosphorus, Iron and Other Minerals:</i> They maintain the proper fluid environment for cellular activity and are constituents of the body cells.</p>	<p><i>Potassium:</i> Meat, potatoes, vegetables. <i>Sodium Chloride:</i> Salt. <i>Iodine:</i> Sea foods and foods from regions with an adequate supply of iodine in water and soil. <i>Manganese:</i> Beans (navy), beets, blueberries, peas (split), wheat bran, wheat (whole grain). <i>Copper:</i> Beef liver, calf liver, chocolate, currants, mushrooms, oysters. <i>Other Minerals:</i> Supplied by above foods.</p>
Potassium			
Sodium	Vitamins	<p><i>Vitamin A:</i> Essential for growth and health Maintains healthful condition of the skin and mucous membrane Helps to build teeth and bones Promotes normal vision Important for vision in dim light.</p>	<p><i>Vitamin A:</i> Liver and fish liver oils. Dairy products in which the fat is retained Fortified oleomargarine Fruits—apricots, peaches, cantaloup Vegetables—green leafy and yellow.</p>
Chlorine			
Iodine			
Copper			
Manganese			
Silicon, Mercury,			
Fluorine, Zinc,			
Aluminum and others			
Vitamin A			

Continued on next page.

TABLE 1—Continued

The Composition of the Body		Food Constituents that Supply the Body Needs for Building and Functioning	Foods that Supply Food Constituents for the Body Needs
Thiamine	Vitamins—Continued	<i>Thiaminc:</i> Essential to metabolism of carbohydrate. Essential to nervous and muscular systems. Contributes to good muscle tone. Maintains and stimulates appetite. Aids the regular bowel movement. Essential for growth.	<i>Thiaminc:</i> Meat, particularly pork. Milk. Enriched or whole grain breads and cereals. Vegetables—green leafy and legumes. Fruits. Nuts.
Riboflavin		<i>Riboflavin:</i> Promotes growth. Helps to keep the skin healthy. Essential to functioning of every body cell. Helps eyesight. Part of one of the essential enzyme systems.	<i>Riboflavin:</i> Milk. Cheese and eggs. Meat and fish. Fruits. Vegetables—green leafy. Whole grain breads and cereals.
Niacin		<i>Niacin:</i> Promotes growth. Necessary to keep skin and other tissues normal. Part of one of the essential enzyme systems.	<i>Niacin:</i> Meat and fish. Fruits. Vegetables. Whole grain and enriched breads and cereals. Peanut butter.
Ascorbic Acid		<i>Ascorbic Acid:</i> Helps to build and maintain strength of walls of capillaries. Essential for normal development of bones, teeth and gums. Essential for normal growth. Essential for maintaining integrity of connective tissue.	<i>Ascorbic Acid:</i> Citrus fruits. Raw vegetables. Tomato.
Vitamin D		<i>Vitamin D:</i> Helps the body to make the best use of calcium and phosphorus in building the bones and teeth. Helps to prevent rickets. Promotes growth.	<i>Vitamin D:</i> Fish liver oil. Milk, especially irradiated milk, modified milk and metabolized milk. Oily fish, such as salmon, herring, sardines. Egg yolk. Butter. Liver.
		<i>Water:</i> The fluid medium of the body necessary for its structure and functioning.	<i>Water:</i> Water and the water found in foods.

TABLE 2
APPROXIMATE AMOUNTS OF THE FOOD CONSTITUENTS NEEDED PER DAY FOR BODY BUILDING AND FUNCTIONING
IN TERMS OF THE STANDARD OR OPTIMAL RECOMMENDATIONS^{1, 2}

	Protein	Fat	Carbohy- drate	Calcium	Phosphorus		Iron	Vitamin A	Thiamine	Riboflavin	Niacin	Ascorbic Acid		Vitamin D
					Grams	Grams						Milli- grams	Milligrams	
Adults:														
Man (154 lb., 70 kg.).....	1-1.5	1-2	4-6	1.0	1.5	12 ³	5000	1500	1800		15	75	— ⁴	
Woman (123 lb., 56 kg.).....	1-1.5	1-2	4-6	1.0	1.5	12	5000	1200	1500		12	70	— ⁴	
Pregnancy (latter half).....	1.5-2	1.5-2	5-6	1.5	1.5	15	6000	1500	2500		15	100	400	
Lactation.....	1.75-2	1.5-2	7-8	2.0	2.0	15	8000	1500	3000		15	150	400	
Children:														
Under 1 year.....	— ⁶	— ⁶	— ⁶	1.0	1.0	6	1500	400	600		4	30	400	
1-3 years (27 lb., 12 kg.).....	3-3.5	4-5	10-14	1.0	1.0	7	2000	600	900		6	35	400	
4-6 years (42 lb., 19 kg.).....	2.5-3	3-4	8-12	1.0	1.0	8	2500	800	1200		8	50	400	
7-9 years (58 lb., 26 kg.).....	2-2.5	3-4	6-10	1.0	1.0	10	3500	1000	1500		10	60	400	
10-12 years (78 lb., 35 kg.).....	2-2.5	2-3	6-10	1.2	1.2	12	4500	1200	1800		12	75	400	
Girls:														
13-15 years (108 lb., 49 kg.)....	1.5-2	2-3	6-8	1.3	1.3	15	5000	1300	2000		13	80	400	
16-20 years (122 lb., 55 kg.)....	1.25-1.5	1-2	6-8	1.0	1.0	15	5000	1200	1800		12	80	400	
Boys:														
13-15 years (108 lb., 49 kg.)....	1.5-2	2.5-3	6-8	1.4	1.4	15	5000	1500	2000		15	90	400	
16-20 years (141 lb., 64 kg.)....	1.5-2	2.5-3	6-8	1.4	1.4	15	6000	1700	2500		17	100	400	

Calories: To estimate the total calories multiply the grams of carbohydrate and the grams of protein by 4 and the grams of fat by 9, and total the results. The amounts of carbohydrate and fat must be adjusted to meet the caloric needs of the individual.

¹ In order to meet the needs of the whole population it is necessary to satisfy the requirements of those with less efficient usage. Since the allowances take into consideration the requirements of those at the upper level of the normal range of requirement, they allow a factor of safety for persons who have an average or less than average requirement. In most categories this factor of safety is approximately 30%.

² Adapted from: *Recommended Daily Dietary Allowances*, Food and Nutrition Board, National Research Council, Washington, D. C., Revised 1948.

³ There is evidence that the male adult needs relatively little iron. The need will be provided for if the diet is satisfactory in other respects.

⁴ The need for supplemental vitamin D for adults seems to be minimum.

⁵ Needs for infants increase from month to month with size and activity. Therefore, no figures have been included in this table.

FOODS THAT ARE THE PRINCIPAL

Protein	Fat	Carbohydrate	Minerals			
			Calcium	Phosphorus	Iron	Manganese
•Milk	Milk	Milk	Milk	Milk	Milk	.....
•Cheese	Cheese	.....	Cheese	Cheese	.....	.....
•Egg	Egg yolk	.....	Egg	Egg yolk	Egg yolk	.....
•Fish	Fish, fat	.....	.....	Fish	Shell fish	.....
•Meat	Meat, fat	.....	.....	Meat	Meat	Liver
•Poultry	.....	.....	.....	Poultry	Poultry	.....
.....	Butter	.....	.....	.....	.....	.....
.....	Cream	.....	Cream	Cream	.....	.....
.....	Lard, oil	.....	.....	.....	.....	.....
.....	Margarine, fortified	.....	.....	.....	.....	.....
.....	.....	Fruits	Fruits	Fruits	Fruits	Fruits
.....	.....	.....	Berries	Berries	Banana	Banana
.....	.....	.....	Citrus fruits	Dried fruits	Berries	Prunes
.....	.....	.....	Figs, dried	.....	Dried fruits	.....
.....	.....	.....	fruits	.....	Grapes	.....
.....
Vegetables	.....	Vegetables	Vegetables	Vegetables	Vegetables	Vegetables
†Beans, dried	.....	Beans, dried	Beans, dried	Beans, dried	Beans, dried	Beans, dried
•soy	.....	soy	snap	fresh	fresh	fresh
†Peas, dried	.....	Peas, dried	soy	Cabbage	soy	Green, leafy
.....	.....	Other vegetables	Green, leafy vegetables	Carrots	Green, leafy vegetables	vegetables
.....	.....	.....	.....	Green, leafy vegetables	Peas, dried	Peas, dried
.....	.....	.....	.....	Peas, fresh	fresh	.....
.....	.....	.....	.....	dried	.....	.....
†Potato	.....	Potato	.....	Potato	Potato	Potato
†Bread	.....	Bread, whole grain or enriched	.....	Bread, whole grain	Bread, whole grain or enriched	.....
.....
†Cereal	.....	Cereal, whole grain or enriched	.....	Cereal, whole grain	Cereal, whole grain or enriched	Cereal
.....
.....	.....	Cornmeal	.....	.....	.....	.....
.....	.....	Crackers	.....	.....	.....	.....
.....	.....	Flour	.....	.....	.....	.....
.....	.....	Honey	.....	.....	.....	.....
.....	.....	Macaroni	.....	.....	.....	.....
.....	.....	Rice, polished	.....	.....	.....	.....
.....	.....	Sugar	.....	.....	.....	.....
.....	.....	Tapioca	.....	.....	.....	.....
.....	.....	Molasses	Molasses	.....	Molasses	.....
†Nuts	Nuts	.....	.....	Nuts	.....	.....

• Complete protein.

† Incomplete protein.

‡ For Table of Food Values and Measures, see Table 22.

TABLE 4
SUMMARY: NATIVE BACKGROUND AND FOOD HABITS OF SOME OF THE FOREIGN-BORN AND THEIR AMERICAN ADJUSTMENTS¹
ITALIANS

BACKGROUND		FOOD HABITS	
		NATIVE	IN AMERICA
GEOGRAPHY AND CLIMATE. (Refrigeration and preservation of food, aside from some drying and pickling, are almost unknown, due to geographical factors which make transportation, etc., difficult.)	REASONS FOR COMING TO THE UNITED STATES. (Emigrants from all countries are almost entirely from the peasant or land-working class. This is the group we are discussing here.)	I. CEREALS, BREADS, STARCHES	
		1. Macaroni and spaghetti. 2. Corn meal, known as polenta, a main dish. 3. Bread; flour for bread and macaroni is not refined, ground whole grain being used. Chestnut flour used in northern part.	1. Corn meal, polenta, used as main dish. Do not care for or use cereals such as oatmeal, Wheatena, farina, etc. 2. Macaroni and spaghetti in many shapes and forms. Use quantities with various sauces and cheese. 3. White bread, very crusty. Are using more Italian whole-wheat bread than formerly.
CHARACTER OF PEOPLE AND HOME LIFE.		II. MILK, CREAM, CHEESE, BUTTER, EGGS	
		1. Milk is used mainly as cheese. Children drink goat's milk. 2. Cheese in abundance, especially hard cheese. 3. No cream. 4. No butter. 5. Eggs fried or in soups.	1. Are learning to use more milk for children to drink, but not enough is used. 2. Do not like American cheese and as imported cheese is expensive, they do not use it as freely as in Italy. 3. No cream. 4. Will give butter to children. 5. Eggs, fried, plain or with peppers, spinach, etc.

FACTORS INFLUENCING CONDITIONS IN THE UNITED STATES.

- 1. Accustomed to out-of-door work at home, in United States they collect in cities, become laborers, fishermen, etc.
- 2. Although they handle more money, it costs more to live. Food is expensive. At home they had their own gardens, fruit trees, and milk supply, and they are amazed at cost of things here.
- 3. Financial circumstances force them into crowded living quarters.
- 4. Incomes are often irregular and usually inadequate for the needs of large families, although people are industrious and thrifty.
- 5. Language difficulty.
- 6. Results are poor living conditions and poorly balanced food intake, predominating in cheap starches (macaroni, white bread), oil, and some meat and eggs to the exclusion of milk, fruits, and vegetables. Results—constipation, overweight, malnutrition.
- 7. If they can have own home and land, they manage nicely.

III. VEGETABLES AND FRUITS

- 1. Green leafy vegetables used in quantities, especially in southern portion; broccoli, escarole, salata, spinach, etc.
- 2. Fresh fruits used in abundance, especially in southern portion; grapes, oranges, persimmons, etc.
- 1. Decreased use of green vegetables and fruits, due to expense and fact that quantities must be consumed to satisfy. Have no gardens in cities.
- 2. Use potatoes occasionally, fried.
- 3. Do not like to use canned goods, except tomato paste.
- 4. Vegetables poorly cooked, as a rule.

IV. MEATS AND MEAT SUBSTITUTES

- 1. Use very little meat, except occasionally for feast days; then more for flavor and as an extender. Salami, hologna, sausages, etc.
- 2. Fish used freely along east coast and in southern section; snails, squid, octopus, clams, as well as fish.
- 3. Quantities of dried peas and beans used in soups and main dishes.
- 4. Chickens; they raise their own.
- 1. Very often meat, because of its greater availability, is used more extensively than in Italy to the exclusion of vegetables. Veal, salami, sausage, Bologna, etc.
- 2. Fish is used by some, especially families of fishermen. Also use squid, octopus, snails, etc.
- 3. Many varieties of dried beans are used in soups and main dishes.

V. SWEETS

- 1. Very few sweet desserts, except on feast days.
- 2. Marzipan (almond paste) made into fancy shapes and small cakes.
- 3. Chestnuts.
- 4. Fruit as dessert.
- 1. Very few desserts, although they make cake.
- 2. Do not like milk puddings, but acquire a taste for sweets, candy, etc., here in United States.
- 3. Marzipan and fancy cakes used on special occasions.
- 4. Chestnuts.
- 5. Often use fruit for dessert.
- 6. Spumoni (a rich ice cream which can be had at Italian restaurants).

VI. MISCELLANEOUS—OILS, SPICES

- 1. Olive oil in quantities.
- 2. Some salt pork.
- 3. Garlic, peppers, etc., for flavor.
- 1. Olive oil in quantities for frying and cooking.
- 2. Salt pork in cooking.
- 3. Garlic, peppers, etc., for flavoring.

¹ Tables compiled and arranged by Miss Charlotte Raymond, nutritionist, American Red Cross, Newtonville, Mass., and Miss Frances Stern, director of the Food Clinic of the Boston Dispensary. Taken From Fairfax Proudft, *Nutrition and Diet Therapy*, 8th ed., 1942. By permission of the Macmillan Company, publishers.

SUMMARY
NATIVE BACKGROUND AND FOOD HABITS (Continued)
 NEAR EAST—ARMENIA, SYRIA, TURKEY, GREECE

BACKGROUND		FOOD HABITS	
		NATIVE	IN AMERICA
GEOGRAPHY AND CLIMATE. (Refrigeration and preservation of food, aside from some drying and pickling, are almost unknown due to geographical factors which make transportation, etc., difficult.)	1. Fairly elevated countries with many mountains, tablelands, and foothills, making communication and transportation difficult. No railroads. Use caravans. 2. Fine grazing and fertile farming land. Rich in minerals. 3. Mild climate. People live out of doors in tents March to November, raising own food.	I. CEREALS, BREADS, STARCHES 1. Cracked whole wheat (bourghour) and rice used plain or with meat or nuts and vegetables. Sometimes as a cereal. 2. Bread is same as that used in time of Christ, baked on griddles in round, flat loaves; also in coarse loaves, oven-baked (Greece). Finely ground whole wheat is used.	
	REASONS FOR COMING TO THE UNITED STATES. (Emigrants from all countries are almost entirely from the peasant or land-working class. This is the group we are discussing here.)		
CHARACTER OF PEOPLE AND HOMELIFE.	1. Persecution by the Turks in the name of Mohammed. Parts of Armenia and Syria are Christianized; hence the Turkish massacres. 2. Few women have come in, except as men already here have returned home to marry. 1. Friendly, neighborly races. 2. Makers of exquisite rugs and etched and tooled copper and brass. Rugs assume importance, because people live out so much and have little use for furniture. Use rugs a great deal. 3. Women good cooks. 4. United family life.	II. MILK, CREAM, CHEESE, BUTTER, EGGS 1. Milk in form of a thick sour milk (goat's milk). 2. Sour milk and hard cheeses. 3. No cream. 4. Butter made of sheep's milk.	
		III. VEGETABLES AND FRUITS 1. Abundance of vegetables stuffed with wheat or rice and meats or nuts, and cooked with oil and lamb broth (squash, peppers, grape leaves, cucumbers, tomatoes, eggplant, etc.) 2. Salads with olive oil and vinegar, and free use of olives. 3. Semitropical fruits in abundance (grapes, dates, figs, oranges, etc.).	
		1. Do not use enough milk. Are suspicious of bottled milk. Pasteurized milk does not make such good Matzoon. 2. Sour milk and hard cheese used somewhat. 3. No cream. 4. No butter—will give both milk and butter to children when urged.	
		1. Plenty of vegetables used, if money permits. These are stuffed with wheat or rice, with meat, nuts, beans, etc., then cooked with oil and lamb broth (peppers, tomatoes, cabbage, and grape leaves, cucumbers, squash, etc.). 2. Few potatoes. 3. Few fruits except dried apricots, raisins, etc.	

FACTORS INFLUENCING CONDITIONS IN UNITED STATES.

These people do not become laborers to any great extent. They have pushcarts, fruit stores, antique-rug shops, are waiters, rug repairers, etc. Because of arts-and-crafts work at home, they are not so lost without out-of-door work here. Under ordinary circumstances these people are usually independent, although high cost of living often results in poorly balanced diet, high in fats and starches and low in fresh vegetables, fruits, and milk. Have been hard hit by the depression.
Results: overweight, some malnutrition, and some constipation.

IV. MEATS AND MEAT SUBSTITUTES

1. Lamb (Kehab) is only meat used to any extent. It is usually harnequed over fire out of doors. Or is combined with cracked wheat or rice and stuffed into vegetables.

2. Nuts are used with cracked wheat or rice in place of meat (pignolias, pistachios, etc.).

3. Dried beans, peas, and lentils used somewhat.
1. Lamb (Kehab) is only meat used to any extent. Is cooked on skewers or with wheat or rice.

Sometimes is ground and eaten raw with cracked wheat. (Some chops; no roasts, etc.).

2. Combined with cracked wheat or rice served instead of potato, stuffed into vegetables, etc.

3. Nuts are used in place of meat with cracked wheat and rice.

4. Dried peas, beans, lentils used somewhat.

V. SWEETS

1. Honey used for sweetening. Molasses made from grapes.

2. Few desserts except on special occasions.

3. Paklava (pastry with nuts and honey).

4. Fruit compotes.

5. Fruit candies and Turkish paste.
1. Both honey and sugar used for sweetening. Molasses made from grapes.

2. Use few desserts.

3. Fruit compotes.

4. Paklava (pastry with nuts and honey) or shredded wheat with nuts and honey-bread and honey with cream can be bought at restaurants and bakeries.

5. Apricot candy, Turkish paste.

VI. MISCELLANEOUS—OILS, SPICES

1. Sheep's butter.

2. Olive oil.

3. Many and varied spices.

4. Turkish coffee.
1. Olive oil used a great deal.

2. Many and varied spices in combination.

3. Turkish coffee.

SUMMARY
NATIVE BACKGROUND AND FOOD HABITS (*Continued*)
JEWISH PEOPLE—FROM RUSSIA, POLAND, GERMANY

BACKGROUND		FOOD HABITS	
		NATIVE	IN AMERICA
<p>GEOGRAPHY AND CLIMATE. (Refrigeration and preservation of food, aside from some drying and pickling, are almost unknown, due to geographical factors, making transportation, etc. difficult.)</p> <p>REASONS FOR COMING TO THE UNITED STATES. (Emigrants from all countries are almost entirely from the peasant or land-working class. This is the group we are discussing here.)</p> <p>CHARACTER OF PEOPLE AND HOME LIFE.</p>	<p>1. Russia, Poland, Germany.</p> <p>2. The Jewish race originated in Palestine, and after the fall of the Temple they went all over the world, driven from one country to another. Jews are loyal to the country of their adoption.</p> <p>1. Depending upon country from which they come. Since 1890 large percentage of Jews came from Russia and Poland. Before that many came from Germany.</p> <p>2. Persecution (note present conditions in Germany).</p> <p>3. Lack of educational opportunities, etc.</p> <p>4. Lure of America, land of liberty and opportunity.</p> <p>1. Although scattered over the earth, the Jews are very race-conscious.</p> <p>2. Very close and beautiful home life. Emphasis on spiritual things.</p> <p>3. Unusually bright and intelligent, as a whole.</p> <p>4. Ambitious, somewhat emotional people, especially the Russian Jew.</p> <p>5. Characteristics moulded by religious precepts and difficulties of generations driven from one place to another.</p>	I. CEREALS, BREADS, STARCHES	
		<p>1. Barley, Kasha (buckwheat) in soups. Corn meal, oats (Polish).</p> <p>2. Noodles and other egg and flour mixtures.</p> <p>3. Dark rye bread (Russian and German). Pumpnickel (German and Russian).</p> <p>4. Unleavened bread (matzoth) at Passover.</p>	<p>1. Oatmeal and farina used as breakfast food.</p> <p>2. Barley, Kasha (buckwheat) in soups.</p> <p>3. Noodles and other egg and flour mixture.</p> <p>4. Rye bread and white seed rolls.</p> <p>5. Matzoth — unleavened bread — at the Passover.</p>
		II. MILK, CREAM, CHEESE, BUTTER, EGGS	
		<p>1. Use of milk dependent on country; land-workers usually have abundance of milk.</p> <p>2. Cream cheese and cottage or pot cheese.</p> <p>3. Sour cream on vegetables, berries, and in soups.</p> <p>4. Sweet butter.</p> <p>5. Eggs in soups, noodles, etc.</p>	<p>1. Use milk plentifully if they can afford it.</p> <p>2. Cream cheese and cottage cheese.</p> <p>3. Sour cream if able to buy it.</p> <p>4. Sweet butter preferred.</p> <p>5. Eggs, plain, in soups, noodles, etc.</p>
		III. VEGETABLES AND FRUITS	
		<p>1. Root vegetables (onions, beets, turnips), cabbage, etc., cooked with meats and in soups (Borsch).</p> <p>2. Some raw vegetables, as lettuce, tomatoes, cucumbers, eaten with sour cream when available.</p> <p>3. Dried fruits (prunes, apricots, peaches, pears, cherries, and apples).</p> <p>4. Pickled and salted vegetables (cucumbers, tomatoes, sauerkraut, etc.).</p>	<p>1. Root vegetables used in soups (Borsch) and with meats.</p> <p>2. Raw vegetables (lettuce, cucumbers, tomatoes, etc.) used frequently.</p> <p>3. Use potatoes with meat.</p> <p>4. Dried fruits, oranges, apples, pears, grapes, plums, etc.</p> <p>5. Pickled and salted cucumbers, tomatoes, relishes, etc.</p>

FACTORS INFLUENCING CONDITIONS IN THE UNITED STATES.	IV. MEATS AND MEAT SUBSTITUTES	
	<ol style="list-style-type: none"> 1. Meat and poultry in any country, killed and prepared according to religious laws. (Can use only clean or Kosher meat (animals that chew the cud and divideth the hoof). Beef, veal. Non-Jewish people from these countries also use pork. 2. Cheaper cuts only used. (Jews cannot use hind quarter of animal.) Meat cooked with vegetables. 3. Jews cannot use meat and dairy products at same meal. 4. Jews use a great deal of chicken, always on Sabbath eve (Friday). 5. Use meat soups. 6. Use internal organs (chopped liver), fish, herring, salmon, pickerel, carp, whitefish. 8. Dried beans, split peas, and lentils, especially in soups. 	<ol style="list-style-type: none"> 1. Meat and poultry chosen, killed, and prepared according to religious law (Kosher). 2. Cheaper cuts used (hind quarters not used). Meat is boiled or cooked with vegetables. 3. Cannot use meat and dairy products at same meal. 4. Use chicken, especially on Sabbath eve. 5. Use meat soups. 6. Use internal organs. 7. Fresh-water fish, cod, haddock, smoked and salt fish, salmon. 8. Dried peas and beans and lentils, used especially in soups, etc.
FACTORS INFLUENCING CONDITIONS IN THE UNITED STATES. RELIGIOUS LAWS	V. SWEETS	
	<ol style="list-style-type: none"> 1. Rich pastry rolled with nuts and fruits (Streudel—German). 2. Dried fruits (prunes, pears, cherries, etc.). 3. Pancakes (Blintzen—Russian). 4. Cheese cake. 5. Sponge cakes and macaroons (at Passover without wheat flour). 	<ol style="list-style-type: none"> 1. Rich pastry rolled with nuts and fruits (Streudel). 2. Dried fruits. 3. Cheese cake. 4. Sponge cakes and macaroons at Passover.
FACTORS INFLUENCING CONDITIONS IN THE UNITED STATES. RELIGIOUS LAWS	VI. MISCELLANEOUS—OILS, SPICES	
	<ol style="list-style-type: none"> 1. Chicken fat used extensively. 2. Oil used some. Flaxseed oil (Polish). 3. Seasonings and many relishes. (Horseradish used somewhat.) 	<ol style="list-style-type: none"> 1. Chicken fat, vegetable oil, Crisco. 2. Highly seasoned food. 3. Many relishes, as horseradish.

TABLE 5
WEIGHT-HEIGHT-AGE TABLES FOR MEN AND WOMEN*

Men

Height		Weights according to Age Period in Pounds								
Ft.	In.	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59
4	11	111	117	122	125	127	130	132	133	134
5	0	113	119	124	127	129	132	134	135	136
5	1	115	121	126	129	131	134	136	137	138
5	2	118	124	128	131	133	136	138	139	140
5	3	121	127	131	134	136	139	141	142	143
5	4	124	131	134	137	140	142	144	145	146
5	5	128	135	138	141	144	146	148	149	150
5	6	132	139	142	145	148	150	152	153	154
5	7	136	142	146	149	152	154	156	157	158
5	8	140	146	150	154	157	159	161	162	163
5	9	144	150	154	158	162	164	166	167	168
5	10	148	154	158	163	167	169	171	172	173
5	11	153	158	163	168	172	175	177	178	179
6	0	158	163	169	174	178	181	183	184	185
6	1	163	168	175	180	184	187	190	191	192
6	2	168	173	181	186	191	194	197	198	199
6	3	173	178	187	192	197	201	204	205	206

Women

Height		Weights according to Age Period in Pounds								
Ft.	In.	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59
4	11	110	113	116	119	122	126	129	131	132
5	0	112	115	118	121	124	128	131	133	134
5	1	114	117	120	123	126	130	133	135	137
5	2	117	120	122	125	129	133	136	138	140
5	3	120	123	125	128	132	136	139	141	143
5	4	123	126	129	132	136	139	142	144	146
5	5	126	129	132	136	140	143	146	148	150
5	6	130	133	136	140	144	147	151	152	153
5	7	134	137	140	144	148	151	155	157	158
5	8	138	141	144	148	152	155	159	162	163
5	9	141	145	148	152	156	159	163	166	167
5	10	145	149	152	155	159	162	166	170	173
5	11	150	153	155	158	162	166	170	174	177
6	0	155	157	159	162	165	169	173	177	182

The height includes ordinary shoes and the weight includes ordinary indoor clothing.
*From the publications of the Metropolitan Life Insurance Company.

TABLE 6
CONVERSION OF POUNDS TO KILOGRAMS

Pounds	Kilograms	Pounds	Kilograms	Pounds	Kilograms	Pounds	Kilograms	Pounds	Kilograms
22	10	55	25	105	48	140	64	175	79
25	11	60	27	110	50	145	66	180	82
30	13	65	29	115	52	150	68	185	84
35	16	70	32	120	55	155	70	190	86
40	18	75	34	125	57	160	73	195	89
45	20	85	39	130	59	165	75	200	91
50	22	95	43	135	61	170	77		

1 kilogram = 2.2 pounds.
To convert pounds to kilograms, divide the pounds by 2.2.

TABLE 7
IDEAL WEIGHTS FOR MEN,* AGES 25 AND OVER

Height (with shoes)	Weight in Pounds (as ordinarily dressed)		
	Small Frame	Medium Frame	Large Frame
<i>Feet Inches</i>			
5 2	116-125	124-133	131-142
5 3	119-128	127-136	133-144
5 4	122-132	130-140	137-149
5 5	126-136	134-144	141-153
5 6	129-139	137-147	145-157
5 7	133-143	141-151	149-162
5 8	136-147	145-156	153-166
5 9	140-151	149-160	157-170
5 10	144-155	153-164	161-175
5 11	148-159	157-168	165-180
6 0	152-164	161-173	169-185
6 1	157-169	166-178	174-190
6 2	163-175	171-184	179-196
6 3	168-180	176-189	184-202

* From the publications of the Metropolitan Life Insurance Company.

TABLE 8
IDEAL WEIGHTS FOR WOMEN,* AGES 25 AND OVER

Height (with shoes)	Weight in Pounds (as ordinarily dressed)		
	Small Frame	Medium Frame	Large Frame
<i>Feet Inches</i>			
4 11	104-111	110-118	117-127
5 0	105-113	112-120	119-129
5 1	107-115	114-122	121-131
5 2	110-118	117-125	124-135
5 3	113-121	120-128	127-138
5 4	116-125	124-132	131-142
5 5	119-128	127-135	133-145
5 6	123-132	130-140	138-150
5 7	126-136	134-144	142-154
5 8	129-139	137-147	145-158
5 9	133-143	141-151	149-162
5 10	136-147	145-155	152-166
5 11	139-150	148-158	155-169

* From the publications of the Metropolitan Life Insurance Company.

TABLE 9
WEIGHT-HEIGHT-AGE TABLE FOR BOYS OF SCHOOL AGE†

Height (Inches)	Average Weight for Height (Pounds)	5 Years	6 Years	7 Years	8 Years	9 Years	10 Years	11 Years	12 Years	13 Years	14 Years	15 Years	16 Years	17 Years	18 Years	19 Years
38	34	34	34*													
39	35	35	35													
40	36	36	36*													
41	38	38	38	38*												
42	39	39	39	39*	39*											
43	41	41	41	41*	41*											
44	44	44	44	44	44*											
45	46	46	46	46	46*	46*										
46	48	47*	48	48	48	48*										
47	50	49*	50	50	50	50*	50*									
48	53		52	53	53	53	53*									
49	55		55	55	55	55	55	55*								
50	58		57*	58	58	58	58	58*	58*							
51	61			61	61	61	61	61	61*							
52	64			63	64	64	64	64	64	64*						
53	68			66*	67	67	67	67	68	68*						
54	71				70	70	70	70	71	71	72*					
55	74				72*	72	73	73	74	74	74*					
56	78				75*	76	77	77	77	78	78	80*				
57	82					79*	80	81	81	82	83	83*				
58	85					83*	84	84	85	85	86	87				
59	89						87	88	89	89	90	90	90			
60	94						91*	92	92	93	94	95	96			
61	99							95	96	97	99	100	103	106*		
62	104							100*	101	102	103	104	107	111	116*	
63	111							105*	106	107	108	110	113	118	123	127*
64	117								109	111	113	115	117	121	126	130*
65	123								114*	117	118	120	122	127	131	134
66	129									119	122	125	128	132	136	139
67	133									124*	128	130	134	136	139	142
68	139										134	134	137	141	143	147
69	144										137	139	143	146	149	152
70	147										143	144	145	148	151	155
71	152										148*	150	151	152	154	159
72	157											153	155	156	158	163
73	163											157*	160	162	164	167
74	169											160*	164	168	170	171

Age, Years	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Average height, inches:														
Short.....	43	45	47	49	51	53	54	56	58	60	62	64	65	65
Medium.....	46	48	50	52	54	56	58	60	63	65	67	68	69	69
Tall.....	49	51	53	55	57	59	61	64	67	70	72	72	73	73
Average annual gain, pounds:														
Short.....	3	4	5	5	5	4	8	9	11	14	13	7	3	
Medium.....	4	5	6	6	6	7	9	11	15	11	8	4	3	
Tall.....	5	7	7	7	7	8	12	16	11	9	7	3	4	

* Note.—In order to extend the range of the tables so as to include weights of children who are taller or shorter than those in these groups there have been added as starred figures estimated weights. All the other weights represent averages for each inch in height and age of the children observed in this study.

† Prepared by Bird T. Baldwin, Ph.D. and Thomas D. Wood, M.D. Reprinted by permission of the American Child Health Association.

TABLE 10
WEIGHT-HEIGHT-AGE TABLE FOR GIRLS OF SCHOOL AGE†

Height (Inches)	Average Weight for Height (Pounds)	5 Years	6 Years	7 Years	8 Years	9 Years	10 Years	11 Years	12 Years	13 Years	14 Years	15 Years	16 Years	17 Years	18 Years
38	33	33	33												
39	34	34	34												
40	36	36	36	36*											
41	37	37	37	37*											
42	39	39	39	39*											
43	41	41	41	41	41*										
44	42	42	42	42	42*										
45	45	45	45	45	45	45*									
46	47	47*	47	47	48	48*									
47	50	49*	50	50	50	50	50*								
48	52		52	52	52	52	53*	53*							
49	55		54	54	55	55	56	56*							
50	58		56*	57	58	58	59	61	62*						
51	61			59	60	61	61	63	65						
52	64			63*	64	64	64	65	67						
53	68			66*	67	67	68	68	69	71*					
54	71				69	70	70	71	71	73*					
55	75				72*	74	74	74	75	77	78*				
56	79					76	78	78	79	81	83*				
57	84					80*	82	82	82	84	88	92*			
58	89						84	86	86	88	93	96*	101*		
59	95						87	90	90	92	96	100	103*	104*	
60	101						91*	95	95	97	101	105	108	109	111*
61	108							99	100	101	105	108	112	113	116
62	114							104*	105	106	109	113	115	117	118
63	118								110	110	112	116	117	119	120
64	121								114*	115	117	119	120	122	123
65	125								118*	120	121	122	123	125	126
66	129									124	124	125	128	129	130
67	133									128*	130	131	133	133	135
68	138									131*	133	135	136	138	138
69	142										135*	137*	138*	140*	142*
70	144										136*	138*	140*	142*	144*
71	145										138*	140*	142*	144*	145*

Age, years	6	7	8	9	10	11	12	13	14	15	16	17	18
Average height, inches:													
Short.....	43	45	47	49	50	52	54	57	59	60	61	61	61
Medium.....	45	47	50	52	54	56	58	60	62	63	64	64	64
Tall.....	47	50	53	55	57	59	62	64	66	66	67	67	67
Average annual gain, pounds:													
Short.....	4	4	4	5	6	6	10	13	10	7	2	1	
Medium.....	5	5	6	7	8	10	13	10	6	4	3	1	
Tall.....	6	8	8	9	11	13	9	8	4	4	1	1	

† Prepared by Bird T. Baldwin, Ph.D., and Thomas D. Wood, M.D. Reprinted by permission of the American Child Health Association.

TABLE 11
AVERAGE WEIGHT FOR HEIGHT TABLE
For Boys from Birth to School Age*

HEIGHT. (In.)	1 Mo.	3 Mos.	6 Mos.	9 Mos.	12 Mos.	18 Mos.	24 Mos.	30 Mos.	36 Mos.	48 Mos.	60 Mos.	72 Mos.
20	8											
21	9	10										
22	10	11										
23	11	12	13									
24	12	13	14									
26	13	14	16	16								
26		16	17	17	18							
27		16	18	18	19							
28			19	19	20	20						
29			20	21	21	21						
30			22	22	22	22	22					
31				23	23	23	23	24				
32				24	24	24	25	25				
33					26	26	26	26	26			
34						27	27	27	27			
36						29	29	29	29			
36							30	31	31	31		
37							32	32	32	32	32	
38								33	33	33	34	
39								36	36	36	36	
40									36	36	36	36
41										38	38	38
42										39	39	39
43										41	41	41
44											43	43
46											46	45
46												48
47												50
48												62
49												66

TABLE 12
AVERAGE WEIGHT FOR HEIGHT TABLE
For Girls from Birth to School Age*

HEIGHT. (In.)	1 Mo.	3 Mos.	6 Mos.	9 Mos.	12 Mos.	18 Mos.	24 Mos.	30 Mos.	36 Mos.	48 Mos.	60 Mos.	72 Mos.
20	8											
21	9	10										
22	10	11										
23	11	12	13									
24	12	13	14	14								
25	13	14	16	16								
26		16	16	17	17							
27			17	18	18							
28			19	19	19	19						
29			19	20	20	20						
30				21	21	21	21					
31				21	22	22	23	23	23			
32					23	24	24	24	26			
33						26	26	26	26			
34						26	26	28	27			
36							29	29	29	29		
38							30	30	30	30	31	
37								31	31	31	32	
38									33	33	33	
39									34	34	34	34
40										36	38	36
41											37	37
42											39	39
43											40	41
44												42
46												46
46												47
47												50
48												62
49												66

* Prepared by Robert M. Woodbury, Ph.D., Children's Bureau, U. S. Dept. of Labor.

TABLE 13
 DETERMINATION OF BASAL ENERGY REQUIREMENT
 DuBois Body Surface Chart
 (As prepared by Boothby and Sandiford of the Mayo Clinic)

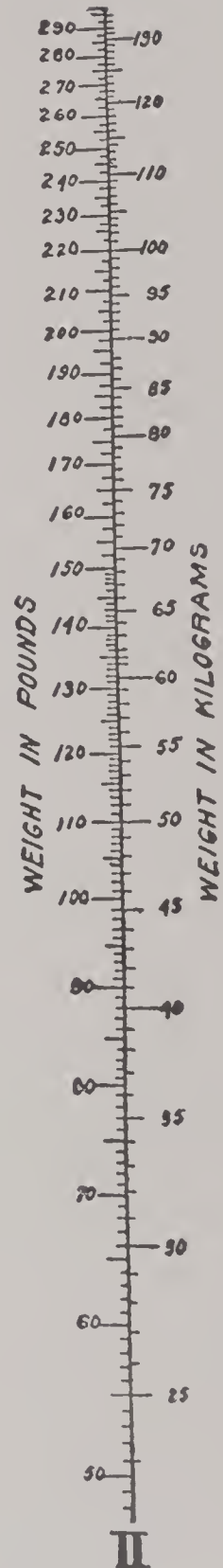
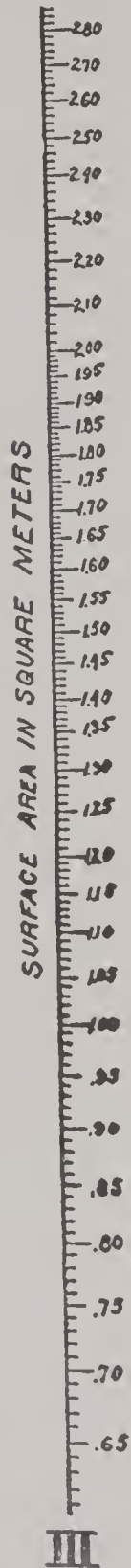
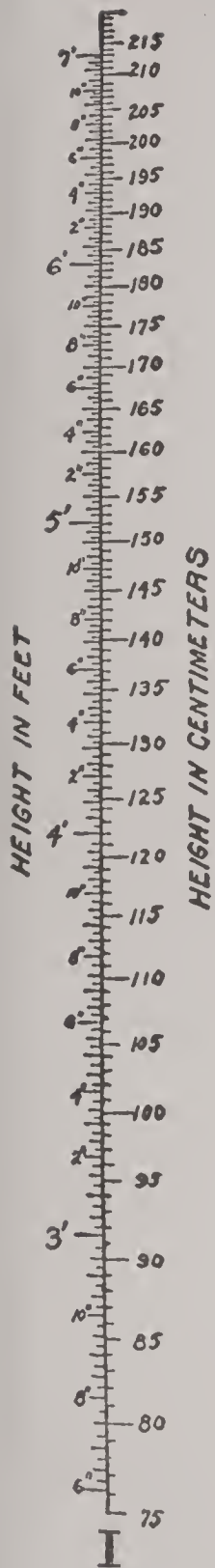


TABLE 14
DETERMINATION OF BASAL ENERGY REQUIREMENT

The Dubois Normal Standards* as Modified by Boothby and Sandiford (From the Mayo Clinic) Prelim. Report: Am. J. Physiol. 1929, 90: 291

Calories per Square Meter per Day

Age	Males	Females	Age	Males	Females
5	1272	1238	20-24	984	886
6	1265	1217	25-29	967	878
7	1248	1162	30-34	955	869
8	1229	1154	35-39	931	859
9	1210	1126	40-44	919	847
10	1188	1099	45-49	907	840
11	1166	1070	50-54	893	828
12	1147	1042	55-59	878	818
13	1130	1028	60-64	864	811
14	1109	984	65-69	847	802
15	1087	950	70-74	(835)	(787)
16	1073	924	75-79	(820)	(775)
17	1049	898			
18	1030	895			
19	1010	892			

* For convenience the Calories for the day have been given rather than Calories per hour as in the original table.

Directions

To determine the Basal Requirement use Body Surface Chart, Table 13.

Draw a line through the person's Height found in Column I and through the Weight in Column II.

Using a straight edge draw a line between these two points.

Read the Body Surface Area where this line intersects Column III.

Refer to Table 14 using the age (nearest birthday) and sex; read the calories needed per square meter per day; multiply the surface area by this figure.

The result is the Basal Energy Requirement in calories per day for the average person of this height, weight, age, and sex.

TABLE 15
ENERGY REQUIREMENT—ADULTS

Calories per Day for Various Grades of Activity per Kilogram of Average Body Weight

	Basal or Rest	Minimal	Very Light	Light	Moderate	Hard	Severe	Very Severe
	Occupation							
		Bedrest	Seamstress* (hand), Typist*, Tailor*	Seamstress* (machine) Bookbinder*, Shoe- maker*, Garment Worker, Salesman, Office Clerk, Teacher	Laundress* (moderate), Metal worker*, Furniture painter* Housewife	Housemaid*, Carpen- ter*, Laundress* (hard), Mechanic, Truckman, House worker	Stonemason*, Laborer, Mason	Man sawing wood, Fireman
Calories per kilogram of body weight per day: Range.....	20 to 25	27.5	30-35	35-40	40-45	45-50	50-70	70-
Per cent in- crease over basal Calo- ries*.....		10	25	50	75	100	150	200

*Based on figures from Lusk, Graham. *Science of Nutrition*, W. B. Saunders, 1928.

TABLE 16
RECOMMENDED DAILY CALORIC ALLOWANCES
Adapted from Food and Nutrition Board, National Research Council
Revised 1948

	Calories per Kilogram of Average Body Weight ¹ per Day	Total Calories ¹ per Day
Man (154 lb., 70 kg.)		
Sedentary.....	34	2400
Physically active.....	43	3000
With heavy work.....	64	4500
Woman (123 lb., 56 kg.)		
Sedentary.....	36	2000
Moderately active.....	43	2400
Very active.....	54	3000
Pregnancy (latter half) ²	43	2400
Lactation.....	54	3000
Children up to 12 yrs.³		
Under 1 yr. ⁴	110	— ⁴
1- 3 yrs. (27 lb., 12 kg.).....	100	1200
4- 6 yrs. (42 lb., 19 kg.).....	84	1600
7- 9 yrs. (58 lb., 26 kg.).....	77	2000
10-12 yrs. (78 lb., 35 kg.).....	71	2500
Children over 12 yrs.		
Girls		
13-15 yrs. (108 lb., 49 kg.).....	53	2600
16-20 yrs. (122 lb., 55 kg.).....	44	2400
Boys		
13-15 yrs. (108 lb., 49 kg.).....	65	3200
16-20 yrs. (141 lb., 64 kg.).....	59	3800

¹ Calorie allowances must be adjusted up or down to meet specific needs; it is suggested that these allowances be regarded as subject to modification of plus or minus 15-20%. Therefore, the calorie values in this table can be only rough guides and are not applicable to all individuals but rather represent group averages. The proper calorie allowance is that which over an extended period will maintain body weight or rate of growth at the level most conducive to well-being.

² During the latter part of pregnancy the calorie allowance should increase approximately 20% above the preceding level. The value of 2400 calories represents the allowance for pregnant, sedentary women.

³ Allowances for children are based on the needs for the middle year in each group (as 2, 5, 8, etc.) and are for moderate activity and for average weight at the middle year of the age group.

⁴ Needs for infants increase from month to month with size and activity. The amounts given are for approximately 6-8 months.

TABLE 17
CALORIC INTAKE OF 269 CHILDREN BASED ON AGE AND SEX*†

Age in Years	Boys		Girls	
	Number of Intakes	Standard Deviation, Range	Number of Intakes	Standard Deviation, Range
		Calories		Calories
1	172	1017-1431	166	996-1452
1½	171	1151-1627	164	1123-1589
2	193	1154-1682	189	1159-1719
2½	201	1221-1769	205	1192-1840
3	233	1255-1829	198	1294-1888
3½	233	1361-1945	190	1276-1912
4	191	1317-1973	206	1334-1984
4½	208	1407-2017	198	1380-2070
5	209	1508-2176	224	1368-2080
5½	175	1491-2179	161	1409-2097
6	179	1590-2274	146	1526-2268
6½	160	1611-2373	116	1533-2217
7	184	1653-2399	143	1583-2389
7½	135	1713-2533	112	1606-2444
8	146	1751-2589	110	1661-2433
8½	99	1729-2723	67	1778-2558
9	99	1843-2847	88	1719-2479
9½	60	1830-2710	42	1714-2472
10	80	1864-2792	63	1706-2486

* Adapted from "Nutrition Studies On Children Living At Home." Beal, Burke and Stuart, from the Department of Maternal Child Health, Harvard School of Public Health, Boston, Mass., Am. J. of Dis. of Children, October 1945.

† Study conducted at six month intervals over a period of 15 years by nutritionists.

A total of 5,916 intakes were calculated to determine the caloric intake of a group of well children living at home. Such a study of average caloric consumption on children having adequate growth and development during this period is of special interest when compared with various standards based on dietary studies and recommended allowances (See Table 16).

TABLE 18

TABLE OF HOUSEHOLD WEIGHTS AND MEASURES*

Weights and Measures of Foods

1 quart	=	4 cups and weighs about 960 grams
1 cup	=	$\frac{1}{2}$ pint = 240 grams = 8 fluid ounces
2 cups	=	1 pint
2 pints	=	1 quart
1 teaspoon	=	5 grams
1 dessert spoon	=	10 grams
1 tablespoon	=	15 grams
3 teaspoons	=	1 tablespoon
16 tablespoons	=	1 cup (standard measurement)

* All measurements are level.

A rounded spoonful approximates usually 2 level spoonfuls

A heaping spoonful approximates usually 3 level spoonfuls

1 sauce dish approximates usually $\frac{1}{2}$ cup

1 full sauce dish approximates usually $\frac{3}{4}$ cup

1 heaping sauce dish approximates usually 1-1 $\frac{1}{2}$ cups

1 scant sauce dish approximates usually $\frac{1}{4}$ - $\frac{1}{2}$ cup

Approximate Weights and Measures of Foods

30 grams = 1 ounce = 2 tablespoons of the following:

Barley, pearl, dry	Cream	Orange juice
Beans, Lima, dried	Lemon juice	Peas, dried
Beans, navy, dried	Milk, skim	Rice
Butter	Milk, whole	Sugar, granulated
Buttermilk	Oil	Tapioca, minute or pearl

30 grams = 1 ounce = 3 tablespoons of the following:

Cornmeal, dry	Cornstarch	Wheat, cereal, dry
---------------	------------	--------------------

30 grams = 1 ounce = 4 tablespoons of the following:

Flour, white, sifted	Cocoa	Oats, rolled, dry
----------------------	-------	-------------------

30 grams = 1 ounce = 5 tablespoons of the following:

Cocoanut, dried

Average Servings*

	Household measure	Grams
Bread	1 slice.....	30
Cereals, dry, uncooked.....	2-3 tablespoons.....	30
Cheese	2 tablespoons.....	30
Fruits, dried.....		30
Fruits, fresh.....		100
Milk	1 glass or cup	240
Meat, fish or poultry.....	3 ounces.....	90
Vegetables, fresh.....	1 sauce dish	100
Vegetables, dried (legumes).....		30

* These amounts of food are the "average servings" referred to throughout the Tables and the Typical Diets and Menus.

TABLE 18—*Continued*

Alcoholic Equivalents

1 Cordial glass (fluid)	=	20 c.c.	=	$\frac{2}{3}$ oz.
1 Brandy glass (fluid)	=	30 c.c.	=	1 oz.
1 Sherry glass (fluid)	=	30 c.c.	=	1 oz.
1 Jigger (fluid)	=	43 c.c.	=	$1\frac{1}{2}$ oz.
1 Wine glass (fluid)	=	100 c.c.	=	$3\frac{1}{2}$ oz.
1 Cup	=	240 c.c.	=	8 oz.

TABLE 19

TABLE OF METRIC WEIGHTS

1 gram	=	$\frac{1}{30}$ ounce (28.35 exact measurement)
$\frac{1}{1000}$ gram (0.001)	=	1 milligram
1 milligram	=	1000 micrograms
$\frac{1}{1,000,000}$ gram	=	1 microgram (1 gamma)
1 kilogram	=	1000 grams

To convert ounces to grams, multiply the ounces by 30 (28.35 grams = 1 ounce)

To convert pounds to kilograms, divide the pounds by 2.2

To convert kilograms to pounds, multiply the kilograms by 2.2

TABLE 20

VITAMIN UNITS

1 International Unit of Vitamins A or D	=	1 United States Pharmacopeia Unit
1 Milligram of Thiamine	=	333 International Units
1 Milligram of Ascorbic Acid	=	20 International Units

Key: United States Pharmacopeia—U.S.P.

International Units—I.U.

Milligram—mg.

Microgram— γ (gamma)

International Unit: The content of vitamin in foods in terms of the activity of a definite quantity of a substance, as a standard of reference, established by the Health Organization of the League of Nations.

TABLE 21

ABBREVIATIONS

av.	average	H.	half	sc.	scant
b.	biscuit	hd.	head	(")	inches
c.	cup	hp.	heaping	s.d.	sauce dish
(C)	canned	J.	juice		$5\frac{1}{4}$ " over all
ch.	chopped	K.	Kellogg's		$3\frac{1}{4}$ " across the bottom
ck.	cooked	L.	large		$1\frac{1}{4}$ " deep
cn.	can	lvs.	leaves	sl.	slice
cu.	cube	m.	medium	sm.	small
d.	diameter	N.B.C.	National Biscuit Co.	sq.	square
enr.	enriched	oz.	ounce	st.	stalk
E.P.	edible portion	p.	piece	str.	strained
g.	grams	qt.	quart	t.	teaspoon (level)
gl.	glass	r.	rounded	T.	tablespoon (level)
gr.	grated	s.	serving	th.	thick
				wh.	whole
				whip.	whipped

TABLE 22
FOOD VALUES AND MEASURES IN TERMS OF AVERAGE SERVINGS OF FOOD

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FOOD VALUES AND MEASURES IN TERMS OF AVERAGE SERVINGS OF FOOD

The values for carbohydrate, protein and fat were computed in most instances to the nearest decimal place. The calories were taken from these sources and rounded to the nearest whole number. Iron was computed in some instances to the second decimal place. Vitamins were rounded to the nearest whole number with the exception of niacin. Sources of data are listed on p. 124. Factors affecting nutritive values will be found on p. 125.

Sodium and potassium figures represent analyses made on edible portions of unprocessed foods except as otherwise designated.

Grams	Foods	Household Measure	Grams		Calories	Grams		Milligrams			I. U.	Micrograms		Milligrams		I. U.
			Car- bohy- drate	Pro- tein		Fat	Calcium	Phos- phorus	Iron	Sodium		Potas- sium	Vitamin A	Thia- mine	Ribo- flavin		Niacin	Ascor- bic Acid	Vita- min D
Beverages																
30	Chocolate, bitter.....	1 sq. (1 oz.).....	(5.4)	(1.6)	15.9.	(0.095)*	0.103	0.8	1.20	249.0.	—	tr.	70	0.30	—	—
180	Cider.....	1 gl. (6 oz.).....	19.0.	—	—	—	—	—	7.20	180.0.	—	—	—	—	—	—
180	Coca-Cola.....	1 bottle (6 oz.).....	20.4	—	—	—	—	—	1.80	93.6	—	—	—	—	—	—
166	Cocoa, all milk.....	1 c. (5 oz. milk).....	19.4	5.5	7.1.	0.175	0.183	0.3	—	—	240	60	278	0.29	tr.	3:4
3	Cocoa, powder.....	1 t.....	0.8	0.2	0.5	(0.003)*	0.018	0.07	0.20	42.0.	—	tr.	10	0.06	—	—
268	Cocomalt, all milk.....	1 L. gl. (8 oz. milk)	33.3	12.2	10.7	0.433	0.373	5.2	—	—	1184	316	408	0.24	2	134
1	Coffee, soluble.....	1 t.....	—	—	—	—	—	—	0.84	31.0	—	10	3	0.56	—	—
240	Gingerale.....	1 gl. (8 oz.).....	21.6	—	—	—	—	—	19.20	1.4	—	—	—	—	—	—
100	Grape juice.....	½ c. sc.....	18.5	0.4	—	0.011	0.010	0.3	1.00	120.0.	—	20	10	—	2	—
240	Orangeade.....	1 bottle (8 oz.).....	(27.4)	—	—	—	—	—	(4.80)	(240.0)	—	—	—	—	—	—
340	Pepsi-Cola.....	1 bottle (12 oz.).....	41.0	—	—	—	—	—	51.00	10.2	—	—	—	—	—	—
1	Postum, Instant.....	1 t.....	0.8	0.06	—	0.001	0.009	0.03	0.71	22.0.	—	—	—	—	—	—
1	Tea, dry.....	1 bag.....	—	—	—	—	—	—	(0.04)	(18.0)	—	—	3	0.06	—	—
180	Water, carbonated.....	1 bottle (6 oz.)...	—	—	—	—	—	—	1.80-32.4	1.1	—	—	—	—	—	—

— = None.

tr = Trace.

() = Tentative or imputed.

* Calcium may not be available because of presence of oxalic acid.

TABLE 22—(Continued)

Grams	Foods	Household Measure	Grams			Calories	Grams			Milligrams			I.U.	Micrograms		Milligrams		I.U.
			Car- bohy- drate	Pro- tein	Alco- hol †		Calcium	Phos- phorus	Iron	Sodium	Potas- sium	Vitamin A		Thia- mine	Ribo- flavin	Niacin	Ascor- bic Acid		Vita- min D
Beverages, Alcoholic																		
230	Ale, average.	1 gl. (8 oz.)	(8.0)	(1.2)	(8.7)	(98)									9	84	1.92	
230	Beer, average.	1 gl. (8 oz.)	9.0	1.5	10.0	112						18.40	105.8		9	69	1.84	
20	Benedictine.	1 cordial gl.	6.6	-	6.6	73												
30	Brandy.	1 brandy gl.	-	-	10.5	74						0.90	1.2					
20	Creme de Menthe.	1 cordial gl.	7.0	-	6.0	70												
20	Curacao.	1 cordial gl.	4.0	-	6.0	58												
30	Gin, dry.	1 brandy gl.	-	-	10.5	74						0.21	0.1					
30	Rum.	1 brandy gl.	-	-	10.5	74						0.60	0.9					
43	Whiskey, Bourbon, Irish, Rye.	1 brandy gl.	-	-	10.5	74						0.13	0.4					
43	Whiskey, Scotch.	1 jigger.	-	-	17.2	120						0.13	0.4					
100	Wine, California, red.	1 wine gl.	0.5	0.2	10.0	73			(0.009)	(0.015)	(0.3)							
100	Wine, California, white.	1 wine gl.	0.5	0.2	10.0	73			(0.009)	(0.015)	(0.3)							
100	Wine, Champagne, domestic.	1 wine gl.	3.0	0.2	11.0	90												
100	Wine, port.	1 wine gl.	14.0	0.3	15.0	162						4.00	75.0					
100	Wine, sauterne.	1 wine gl.	4.0	0.2	10.5	90						10.00	87.0					
100	Wine, sherry.	1 wine gl.	8.0	0.3	15.0	138												
100	Wine, tokay.	1 wine gl.	12.0	0.3	10.0	119												
Breads																		
35	Biscuit, baking powder.	1, 2" d.	15.0	2.5	2.6	93			0.021	0.031	0.6			24	88	75	0.67	
44	Bread, Boston brown.	1 sl.	18.0	2.5	2.0	100			0.057	0.083	1.3	123.20	153.4	44	48	55	0.26	
45	Bread, corn.	1 pc, 2" sq.	21.0	3.1	4.1	133			0.030	0.051	1.0			177	112	80	0.45	2
30	Bread, cracked wheat.	1 sl.	14.0	2.8	1.3	79			0.016	0.046	0.6				48	30	0.48	
30	Bread, French or Vienna.	1 sl., 1" thick.	16.6	2.5	0.3	79			0.008	0.028	0.4				72	46	0.66	
25	Bread, graham.	1 sl.	12.3	2.3	0.8	65			0.013	0.038	0.4				60	25	0.45	
25	Bread, raisin.	1 sl.	14.1	1.8	0.4	67			0.015	0.026	0.5			5	55	34	0.47	
30	Bread, rye, dark.	1 sl.	15.0	2.0	0.4	72			(0.007)	(0.045)	(0.5)	(177.00)	(48.0)		(60)	(18)	(0.40)	

Breads (cont'd)

30	Bread, rye, light.	1 sl.	15.5	2.0	1.0	79	(0.007)	(0.029)	(0.2)	(177.00)	(30.0)	(48)	(12)	(0.33)	—	—
30	Bread, white enr. (min.)	1 sl.	16.0	2.5	0.6	79	0.017	0.030	0.6	192.00	54.0	72	42	0.66	—	—
30	Bread, whole wheat (100%)	1 sl.	14.4	2.9	1.1	79	0.018	0.120	0.8	279.00	69.0	84	45	0.98	—	—
45	Muffin, cornmeal	1, 2 1/4" d.	19.6	3.8	3.2	123	0.033	0.058	0.7	—	—	132	101	0.59	—	4
50	Muffin, English	1, 3 1/4" d.	23.0	3.0	4.0	140	—	—	—	—	—	—	—	—	—	—
40	Muffin, plain	1, 2 1/4" d.	17.4	3.3	3.2	111	0.029	0.045	0.7	—	—	117	96	0.67	—	4
35	Roll, white, cloverleaf	1 av.	21.8	3.0	1.4	112	0.006	0.029	0.8	—	—	32	113	0.87	—	3
35	Roll, white, hard	1 av.	19.0	3.0	2.1	107	0.020	0.035	0.6	—	—	—	53	0.77	—	—
30	Roll, white, Parkerhouse	1 av.	15.2	2.3	2.2	90	0.014	0.029	0.5	—	—	85	73	0.53	—	3
35	Roll, whole wheat	1 av.	19.2	3.0	1.5	102	0.007	0.061	0.8	—	—	—	45	1.12	—	—
5	Toast, melba	1 sl.	4.0	0.6	0.2	20	0.004	0.008	0.1	—	—	6	5	0.10	—	—

Cereals

30	Barley, pearl, dry	2 T. (1/2 c. ck.)	22.0	2.4	0.2	100	0.004	0.052	0.6	0.90	48.0	34	22	0.86	—	—
30	Bran, All, Kellogg's	1 c.	18.2	3.7	0.8	95	0.029	0.370	3.3	420.00	360.0	110	—	6.00	—	—
30	Bran, flakes, Kellogg's	1 c.	21.4	3.0	0.6	103	0.016	0.184	1.1	—	—	—	—	2.40	—	—
30	Bran, flakes, raisin, Kellogg's	1 c.	21.8	2.6	0.6	102	0.017	0.154	1.1	—	—	—	—	2.00	—	—
30	Cerevim	1 oz. (8 T.)	18.5	5.5	0.7	102	0.220	0.145	7.5	—	—	—	—	6.00	—	—
30	Cheerios	1 f. c. (8 hp. T.)	19.1	4.4	2.0	112	0.045	0.100	1.2	—	—	—	—	0.50	—	—
30	Corn, flakes	1 1/2 c.	24.5	2.2	0.1	107	0.001	0.011	0.5	198.00	48.0	—	—	0.60	—	—
15	Corn, popped	1 c. (no fat)	11.7	1.7	0.4	61	0.003	—	0.3	0.45†	36.0†	75	—	0.03	—	—
30	Cornmeal, yellow, dry	3 T. (1/2 c. ck.)	23.4	2.5	0.3	106	0.003	0.042	0.3	(0.20)	(36.0)	90	45	0.27	—	—
30	Cornmeal, yellow, dry, enr.	3 T. (1/2 c. ck.)	23.4	2.5	0.3	106	0.033	0.042	0.9	0.20	36.0	0-90	135	1.08	—	—
30	Cream of wheat, dry, enr. 5 min.	3 T. (1/2 c. ck.)	22.0	3.6	0.4	106	0.151	0.169	12.7	27.00	25.2	—	159	0.40	—	—
30	Cream of wheat, dry, regular	3 T. (1/2 c. ck.)	22.8	3.5	0.3	108	0.011	0.032	1.1	0.60	25.8	—	18	0.22	—	—
30	Farina, dry, enr.	3 T. (1/2 c. ck.)	23.1	3.1	0.1	106	0.132	0.031	1.6	(27.00)	(25.2)	—	30	0.05	—	423
30	Gerber's cereal food, dry	1 oz. (11 T.)	20.2	4.1	1.0	107	0.150	0.186	12.8	—	—	—	132	1.05	—	—
30	Grapenuts	2 hp. T.	24.4	3.3	0.2	112	0.014	0.098	1.7	198.00	69.0	—	420	1.62	—	—
30	Grapenut Flakes	1 c.	23.7	3.3	0.4	112	0.012	0.119	1.4	—	—	—	255	1.50	—	—
100	Hominy, canned	1 1/2 c.	15.8	1.8	0.2	71	0.002	0.015	0.2	250.00	22.0	—	159	1.71	—	—
30	Kix	1 1/2 c.	22.5	2.4	0.8	107	—	—	1.2	—	—	—	—	0.02	—	—
30	Maltex, dry	2 T. (1/2 c. ck.)	23.0	5.0	0.5	117	0.016	0.081	1.1	1.20	75.0	—	46	0.62	—	—

— = None.

∞ = No data.

tr = Trace.

() = Tentative or imputed.

† Each gram of alcohol supplies 7 calories.

‡ Figure represents "popped and oiled."

TABLE 22—(Continued)

Grams	Foods	Household Measure	Grams			Calories	Grams		Milligrams			I.U.	Micrograms		Milligrams		I.U.
			Carbohy- drate	Pro- tein	Fat		Calcium	Phos- phorus	Iron	Sodium	Potas- sium		Vitamin A	Thia- mine	Ribo- flavin	Niacin		Ascor- bic Acid
Cereals (cont'd)																	
30	Oats, rolled, dry	4 T. ($\frac{1}{4}$ c. ck.)	19.4	5.0	2.0	116	0.015	0.131	1.2	0.60	102.0	—	204	39	0.33	—	—
10	Pabena, dry	4 T.	6.9	1.4	0.2	35	0.080	0.074	3.0	64.00	34.0	—	120	—	—	—	—
10	Pablum, dry	4 T.	7.0	1.5	0.5	39	0.078	0.065	3.0	62.00	38.0	—	120	35	0.26	—	—
30	Ralston, dry	2 T. ($\frac{1}{4}$ c. ck.)	21.4	4.0	0.7	108	0.017	0.117	1.1	0.30	108.0	—	169	62	1.53	—	—
30	Rice, brown, dry	2 T. ($\frac{1}{4}$ c. ck.)	23.3	2.3	0.5	107	0.012	0.091	1.7	2.70	45.0	—	87	15	1.38	—	—
30	Rice Krispies	1 c.	24.9	1.9	0.1	108	0.007	0.032	0.5	—	—	—	110	—	2.00	—	—
30	Rice, puffed, "Sparkies"	2 c.	26.4	1.8	0.2	114	0.004	0.028	0.6	0.30	30.0	—	166	12	1.56	—	—
30	Rice, white, dry	2 T. ($\frac{1}{4}$ c. ck.)	24.0	2.3	0.1	107	0.003	0.028	0.2	0.60	39.0	—	15	9	0.42	—	—
15	Tapioca, minute or pearl	1 T.	13.0	0.1	—	52	0.002	0.002	(0.1)	0.75	2.9	—	—	—	—	—	—
30	Wheatena, dry	2 T. ($\frac{1}{4}$ c. ck.)	23.0	3.1	0.6	110	0.009	0.098	0.1	0.60	114.0	—	39	45	1.20	—	—
30	Wheat, flakes	1 c.	21.2	3.5	0.7	105	0.014	0.091	1.0	390.00	96.0	—	125	40	1.73	—	—
30	Wheaties	1 c.	22.5	3.1	0.5	107	0.009	0.100	1.3	(390.00)	(96.0)	—	150	37	1.50	—	—
30	Wheat, puffed, "Sparkies"	2 c.	23.2	4.0	0.4	112	0.008	0.104	1.2	1.20	102.0	—	166	70	2.40	—	—
30	Wheat, shredded	1 b.	23.6	3.1	0.4	110	(0.011)	(0.116)	(1.1)	0.60	99.0	—	60	42	1.26	—	—
Crackers																	
5	Arrow root (N.B.C.)	1	3.8	0.4	0.5	21	0.001	0.005	tr.	—	—	—	—	—	—	—	—
5	Butter thin	1	3.5	0.5	0.7	22	0.001	0.005	tr.	—	—	—	3	—	0.03	—	—
5	Cheese	1, 2" d.	2.9	0.8	0.8	22	0.002	0.010	tr.	—	—	—	3	—	0.03	—	—
3	Crax	1	3.5	0.5	1.0	25	0.001	0.005	0.1	—	—	—	(3)	—	0.03	—	—
10	Graham	1, 2 $\frac{1}{2}$ " sq.	7.4	0.8	1.0	42	0.002	0.020	0.2	71.00	33.0	—	30	12	0.15	—	—
20	Matzoth, American (unsalted)††	1, 6" d.	17.3	2.1	0.2	79	—	—	—	—	—	—	—	—	—	—	—
30	Matzoth, meal	5 T.	26.0	—	—	104	—	—	—	—	—	—	—	—	—	—	—
100	Meal, cracker	1 c.	72.7	9.5	10.3	422	0.022	0.102	1.5	—	—	—	70	—	0.60	—	—
10	Oyster	10	7.0	1.0	0.9	40	—	0.010	—	—	—	—	—	—	—	—	—
20	Pilot (N.B.C.)	1	15.3	1.9	1.7	84	0.003	0.018	0.3	—	—	—	14	—	0.12	—	—
20	Pretzel	1 m. (22 to 1 lb.)	15.0	1.8	0.6	73	0.007	0.026	0.3	340.00	26.0	—	—	—	—	—	—
3	Ritz (N.B.C.)	1	1.9	0.2	0.8	16	0.001	0.004	0.1	—	—	—	1	—	—	—	—
15	Rusk	1 (30 to 1 lb.)	10.3	2.1	1.3	61	0.003	0.018	0.3	—	—	—	—	—	—	—	—
7	Ry-Krisp	1	5.0	0.8	—	23	0.004	0.025	0.3	105.00	42.0	—	21	15	0.15	—	—

Crackers (cont'd)

4 ¹ Saltine.....	3.0.	0.4.	0.5.	19	0.001...	0.004	0.06.	✓	✓	2	—	—	—
6 Unecda.....	4.5.	0.6	0.6.	26	0.001...	0.006	0.1.	(66.00)	(7.2)	2	—	—	—
5 Whole wheat (N.B.C.).....	4.1.	0.5.	0.8.	26	0.001...	0.016	0.2.	✓	✓	3	—	—	—
8 Zwieback.....	6.3.	0.8.	0.6.	34	0.008...	0.012	0.1.	20.00.	12.0.	—	—	—	—

Dairy Products

5 Butter, av. salted.....	tr	tr	4.0.	36	0.001...	0.001	—	49.00	—	165%	—	tr	—
15 Butter, av. salted.....	tr	tr	12.0.	108	0.003...	0.003	—	147.00	—	495%	1	0.01	—
5 Butter, unsalted.....	tr	tr	4.0.	36	0.001...	0.001	—	0.25	0.2	165%	—	tr	—
30 Cheese, American (cheddar)...	0.5.	7.0.	9.7.	117	0.262...	0.183	(0.2)	210.00	27.6.	522	12	150	—
30 Cheese, Camembert.....	—	5.6	7.1.	86	0.193...	0.141	0.3	✓	✓	1023	✓	235	✓
30 Cheese, cottage.....	1.3.	5.8.	0.2.	30	0.025...	0.079	0.2	87.00	21.6	9	6	87	—
30 Cheese, cream.....	0.5.	2.1.	11.0.	109	0.089...	0.062	0.05	75.00	22.0	663	3	42	—
30 Cheese, Limburger.....	0.3.	4.9	7.3.	87	0.125...	0.162	—	✓	✓	(397)	—	(0.04)	—
30 Cheese, pimento, Kraft.....	1.9.	2.3	5.8.	69	0.017...	0.031	✓	✓	✓	—	✓	✓	✓
30 Cheese, Roquefort.....	0.4.	6.2	9.4.	111	0.206...	0.150	0.3	✓	✓	1134	9	128	✓
30 Cheese, Swiss.....	0.5.	7.1.	7.7.	100	0.247...	0.224	(0.2)	(213.00)	(30.0)	(500)	(11)	(142)	✓
30 Cream, heavy, 40%.....	1.0.	0.6	10.6.	102	0.022...	0.016	(0.02)	12.00	16.8	(496)	(8)	(40)	tr
120 Cream, heavy, 40%.....	4.0.	2.4	42.4.	407	0.088...	0.064	(0.1)	48.00	67.2	(1984)	(32)	(160)	tr
240 Cream, heavy, 40%.....	8.0.	4.8.	84.8.	814	0.176...	0.128	(0.2)	96.00	134.4	(3968)	(64)	(320)	tr
15 Cream, light, 20%.....	0.6.	0.4	3.0.	31	0.014...	0.012	(0.01)	(6.00)	(8.4)	(125)	(5)	(21)	2
30 Cream, light, 20%.....	1.2.	0.8.	6.0.	62	0.028...	0.024	(0.02)	(12.00)	(16.8)	(250)	(10)	(42)	4
120 Cream, light, 20%.....	4.8.	3.2	24.0.	248	0.112...	0.096	(0.08)	(48.00)	(67.2)	(1000)	(40)	(168)	16
100 Egg, dried, whole.....	2.6	48.2	43.3.	593	0.187...	0.800	8.7	✓	✓	4460	350	1230	330
55 Egg, scrambled.....	1.1.	6.9	10.5.	127	0.045...	0.120	1.4	✓	✓	750	58	192	49
30 Egg, white.....	0.2.	3.2	—	14	0.002...	0.005	0.03	33.00	30.0	—	✓	80	—
50 Egg, whole.....	0.4.	6.4	5.8	79	0.027...	0.105	1.4	40.50	50.0	570	60	170	45
18 Egg, yolk.....	0.1.	2.6	5.1	57	0.024...	0.094	1.2	4.70	18.0	514	51	83	45
100 Ice cream, chocolate.....	18.6	2.9	12.3	197	0.090...	0.090	0.2	✓	✓	394	29	140	1
100 Ice cream, strawberry.....	22.4	2.5	9.0	181	0.088...	0.070	0.2	✓	✓	380	33	133	1
100 Ice cream, vanilla.....	20.8	4.0	12.3	210	0.132...	0.104	0.1	100.00	90.0	540	40	190	tr

— = None.

✓ = No data.

() = Tentative or imputed.

§ The vitamin A content of butter varies according to the season or the type of feed for the animals.

†† 20 grams of Matzoth (salted) contains 94 milligrams of sodium and 24 milligrams of potassium.

TABLE 22—(Continued)

Grams	Foods	Household Measure	Grams			Calories	Grams		Milligrams			I.U.	Micrograms		Milligrams		I.U.	
			Car- bohy- drate	Pro- tein	Fat		Calcium	Phos- phorus	Iron	Sodium	Potas- sium		Vitamin A	Thia- mine	Ribo- flavin	Niacin		Ascor- bic Acid	Vita- min D
Dairy Products (cont'd)																		
140	Ice cream, chocolate	1 av. s. ($\frac{1}{2}$ pt.)	26.0	4.1	17.2	278	0.124	0.122	0.3	~	~	552	40	196	0.19	1	2	
150	Ice cream, strawberry	1 av. s. ($\frac{1}{2}$ pt.)	33.6	3.8	13.6	272	0.132	0.106	0.3	~	~	570	49	200	0.20	19	2	
142	Ice cream, vanilla	1 av. s. ($\frac{1}{2}$ pt.)	29.5	5.7	17.5	298	0.188	0.148	0.14	142.00	127.8	767	57	270	0.14	tr.	tr.	
240	Milk, buttermilk, cultured	1 c.	12.2	8.4	0.2	84	(0.283)	(0.223)	(0.17)	312.00	336.0	(tr.)	(96)	(432)	(0.24)	(2)	~	
245	Milk, chocolate flavored	1 c.	25.4	7.7	5.3	180	0.262	0.218	0.17	~	~	216	72	384	0.24	~	~	
30	Milk, condensed	2 T.	16.4	2.4	2.6	98	0.082	0.068	(0.06)	42.00	102.0	(130)	(16)	(118)	(0.06)	~	~	
30	Milk, dried, whole	2 T.	10.8	7.3	7.6	141	0.269	0.206	0.16	123.00	330.0	397	85	399	0.20	2	~	
30	Milk, evaporated	2 T.	3.1	2.2	2.5	44	0.079	0.063	0.05	30.00	81.0	74-137	16	110	0.06	tr.	25	
126	Milk, evaporated	$\frac{1}{2}$ c.	12.3	8.6	10.0	175	0.316	0.253	0.2	126.00	340.2	295-549	65	450	0.25	2	100	
100	Milk, goat's	$\frac{1}{2}$ c. sc.	4.5	3.2	3.8	65	0.128	0.103	0.2	34.00	180.0	170	57	82	0.25	2	5	
9	Milk, malted, dry	1 T.	6.4	1.3	0.8	38	0.032	0.031	0.2	39.60	64.8	27	31	45	~	~	~	
30	Milk, powdered, whole	2 T.	10.8	7.3	7.6	141	0.269	0.206	0.16	123.00	330.0	397	85	399	0.20	2	~	
30	Milk, skim	2 T.	1.5	1.1	0.03	11	(0.035)	(0.028)	(0.02)	15.60	45.0	~	(12)	(54)	(0.03)	~	~	
240	Milk, skim	1 c.	12.2	8.4	0.2	84	(0.283)	(0.223)	(0.17)	124.80	360.0	(tr.)	(96)	(432)	(0.24)	(2)	~	
30	Milk, whole	2 T.	1.5	1.0	1.2	21	0.035	0.028	0.02	15.00	42.0	(48)	12	51	0.03	tr.	0.5	
120	Milk, whole	$\frac{1}{2}$ c.	6.0	4.0	4.4	80	0.141	0.111	0.08	60.00	168.0	(192)	48	204	0.12	1	2	
180	Milk, whole	$\frac{3}{4}$ c.	9.0	6.0	6.6	119	0.211	0.167	0.12	90.00	252.0	(288)	72	306	0.18	2	4	
240	Milk, whole	1 c.	12.0	8.4	9.4	167	0.283	0.223	0.17	120.00	336.0	(384)	96	408	0.24	2	5	
960	Milk, whole	1 qt.	48.0	34.0	38.0	670	1.132	0.892	0.68	480.00	1314.0	1536	384	1632	0.96	8	20	
Desserts																		
~	Cake, angel	$4\frac{1}{2}$ " x 3", $3\frac{1}{2}$ " arc	43.4	4.7	0.1	193	0.005	0.018	0.2	~	~	~	9	94	0.14	~	~	
~	Cake, applesauce	1 p., $2\frac{1}{2}$ " cu.	65.1	3.3	8.1	347	0.030	0.071	1.3	~	~	382	65	49	0.33	~	~	
~	Cake, chocolate	1 p., 3 " x 2 " x 1 "	34.7	3.6	7.7	223	0.025	0.060	0.9	~	~	223	110	110	0.80	~	~	
~	Cake, chocolate cup, choc. icing	1 m.	44.1	3.0	7.6	257	0.034	0.070	0.5	~	~	161	17	78	0.19	~	5	
~	Cake, fruit	1 p., 2 " x 2 " x $\frac{1}{2}$ "	15.0	1.7	3.2	96	0.028	0.043	1.3	~	~	46	~	~	~	~	~	
~	Cake, plain	1 p., $2\frac{1}{2}$ " cu.	42.7	3.3	7.0	247	0.032	0.053	0.4	~	~	315	31	60	0.22	~	~	
~	Cake, plain, cup cake	1 m.	32.0	2.5	5.0	183	0.024	0.040	0.3	~	~	236	25	45	0.16	~	~	
~	Cake, plain, with boiled icing	1 p., $2\frac{1}{2}$ " cu.	49.2	3.4	4.9	253	0.033	0.080	1.3	~	~	315	31	60	0.22	~	~	
~	Cake, sponge	$4\frac{1}{2}$ " x 3", $3\frac{1}{2}$ " arc	37.0	5.9	4.5	211	0.023	0.091	1.2	~	~	428	55	132	0.14	~	~	

Desserts (cont'd)										
...	Cake, white.....	2½" cu.....	42.7	3.3	6.2	240	0.029	0.043	0.2	~
10	Cookies, assorted.....	1 av.....	7.5	0.6	1.3	44	0.002	0.006	0.1	tr.
15	Cookies, chocolate.....	1 L. or 2 sm.....	9.9	1.2	3.2	73	0.005	0.019	0.5	2
15	Cookies, fig bar, comm.....	1.....	11.4	0.6	0.7	54	0.010	0.010	0.2	~
5	Cookies, ginger snaps.....	1, ¾" d.....	3.9	0.3	0.5	21	~	~	~	~
25	Cookies, macaroon.....	1 L. or 2 sm.....	16.4	1.6	4.2	110	~	~	~	~
15	Cookies, molasses.....	1 L., 3½" d.....	10.1	0.9	2.7	68	0.011	0.011	0.5	1
25	Cookies, oatmeal macaroon.....	1 thin, 2¼" d.....	13.0	2.3	1.5	75	0.008	0.058	0.6	~
110	Eclair, choc. icing.....	1 av., custard fill- ing	30.3	4.4	11.9	248	0.063	0.095	0.6	15
10	Gelatin.....	1 T.....	~	6.8	~	27	~	~	~	~
100	Gingerbread.....	2" cu.....	51.0	4.6	21.7	417	0.067	0.062	2.5	143
100	Ice cream, chocolate.....	½ c., r.....	18.6	2.9	12.3	197	0.090	0.090	0.2	394
100	Ice cream, strawberry.....	½ c., r.....	22.4	2.5	9.0	181	0.088	0.070	0.2	380
100	Ice cream, vanilla.....	½ c., r.....	20.8	4.0	12.3	210	0.132	0.104	0.1	540
140	Ice cream, chocolate.....	1 av. s. (½ pt.).....	26.0	4.1	17.2	278	0.124	0.122	0.3	552
150	Ice cream, strawberry.....	1 av. s. (½ pt.).....	33.6	3.8	13.6	272	0.132	0.106	0.3	570
142	Ice cream, vanilla.....	1 av. s. (½ pt.).....	29.5	5.7	17.5	298	0.188	0.148	0.14	767
...	Ice, orange.....	4 hp. T.....	37.0	~	~	148	0.013	0.009	0.2	101
100	Lemon gelatin.....	1 s. d.....	28.0	1.7	~	118	0.003	0.003	~	8
...	Mousse, chocolate.....	3 hp. T.....	17.3	2.1	20.0	258	0.071	0.058	0.2	822
...	Pie, apple.....	⅙, 9" pie.....	34.0	2.6	13.3	266	0.011	0.036	0.6	116
...	Pie, blueberry.....	⅙, 9" pie.....	47.5	3.4	14.6	336	0.015	0.034	1.3	175
...	Pie, cherry.....	⅙, 9" pie.....	56.4	3.7	14.4	369	0.015	0.039	1.1	358
...	Pie, chocolate.....	⅙, 9" pie.....	40.8	6.7	15.2	327	0.117	0.153	0.8	371
...	Pie, lemon meringue.....	⅙, 9" pie.....	46.0	3.6	11.2	300	0.014	0.054	0.7	261
...	Pie, mince.....	⅙, 9" pie.....	46.0	6.2	16.0	353	0.019	0.081	1.4	113
...	Pie, pumpkin.....	⅙, 9" pie.....	48.5	6.5	12.1	329	0.096	0.136	2.0	2049
...	Pudding, bread.....	3 hp. T.....	21.8	5.7	7.6	178	0.126	0.123	0.6	367
...	Pudding, cornstarch, plain.....	3 r. T.....	24.0	3.1	3.5	140	0.106	0.084	0.1	144
...	Pudding, custard.....	3 hp. T.....	19.6	9.0	9.0	196	0.162	0.190	1.1	620
...	Pudding, Indian.....	⅙ c.....	29.7	7.4	7.9	220	0.301	0.208	1.8	342
...	Pudding, rice with raisins.....	⅙ c.....	46.0	5.8	4.8	250	0.151	0.140	0.5	199
...	Pudding, tapioca.....	⅙ c.....	25.5	7.5	6.1	180	0.125	0.136	1.1	382

- = None. ~ = No data. tr = Trace. () = Tentative or imputed.
 ¶ If the vitamin D content of milk has been increased by any method it will be indicated, ranging from 135-400 I.U. per quart.

TABLE 22—(Continued)

Grams	Foods	Household Measure	Grams			Calories	Grams		Milligrams			I.U.	Micrograms		Milligrams		I.U.		
			Car- bohy- drate	Pro- tein	Fat		Calcium	Phos- phorus	Iron	Sodium	Potas- sium		Vitamin A	Thia- mine	Ribo- flavin	Niacin		Ascor- bic Acid	
Desserts (cont'd)																			
130	Sherbet, lemon.....	½ c.....	46.4	4.6	4.8	247			0.147...	0.111...	0.1...	~	~	195	55	217	0.14...	8	3
175	Shortcake, strawberry, biscuit.	1 av. s. with cream	42.7	4.0	18.1	349			0.073...	0.078...	1.4...	~	~	900	108	185	0.97...	60	4
170	Shorteake, strawberry, sponge.	1 av. s. with cream	51.2	4.8	12.8	340			0.065...	0.098...	1.5...	~	~	888	63	182	0.41...	60	18
Fats																			
12	Bacon.....	1 T.....	-	-	12.0	108			-	-	-	~	~	-	-	-	-	-	-
5	Chicken fat.....	1 t.....	-	-	5.0	45			-	-	-	~	~	-	-	-	-	-	-
15	French dressing.....	1 T.....	2.1	0.1	6.8	70			0.001...	0.001...	0.03	~	~	-	-	-	-	-	-
15	Lard.....	1 T.....	-	-	15.0	135			-	-	-	0.05	tr.	-	-	-	-	-	-
15	Mayonnaise.....	1 T.....	0.5	0.2	11.0	101			0.002...	0.008...	0.10	88.50	3.8	29	6	6	tr.	-	3
15	Mineral oil dressing.....	1 T.....	tr.	0.2	0.4	4			0.002...	0.008...	0.11	~	~	45	4	7	tr.	-	4
15	Oil, corn.....	1 T.....	-	-	15.0	135			-	-	-	0.03	tr.	-	-	-	-	-	-
15	Oil, cottonseed.....	1 T.....	-	-	15.0	135			-	-	-	~	~	-	-	-	-	-	-
15	Oil, fish liver (cod).....	1 T.....	-	-	15.0	135			-	-	-	0.02	-	11,000	-	-	-	-	1100
15	Oil, olive.....	1 T.....	-	-	15.0	135			-	-	-	0.03	tr.	-	-	-	-	-	-
15	Oil, peanut.....	1 T.....	-	-	15.0	135			-	-	-	0.03	tr.	-	-	-	-	-	-
15	Oleomargarine, fortified.....	1 T.....	0.1	0.1	11.3	103			0.003...	(0.002)	0.03	165.00	8.7	258-429	-	-	-	-	-
30	Peanut butter.....	2 T.....	5.0	9.0	14.0	182			0.020...	0.118...	0.60	36.00	246.0	-	60	48	4.86	-	-
35	Salt pork, fat, raw.....	1" x 2" x 1".....	-	1.4	29.8	273			0.001...	0.015...	0.20	630.00	9.5	-	(60)	(10)	(0.30)	-	-
15	Shortening, Criseo or Spry.....	1 T.....	-	-	15.0	135			-	-	-	0.60	-	-	-	-	-	-	-
12	Suet.....	1 T.....	-	0.2	11.2	106			0.001...	0.001...	tr.	~	~	-	72	-	-	-	-
Fish																			
12	Anchovy (C).....	3 sm.....	0.04	2.3	1.2	20			0.003...	0.026...	0.10	~	~	~	~	~	~	~	~
7	Anchovy paste.....	1 t.....	0.3	1.4	0.8	14			0.001...	0.015...	0.04	686.00	14.0	~	~	~	~	~	~
90	Bass, white.....	3 oz.....	-	19.3	0.5	81			0.021...	0.221...	1.10	~	~	-	(63)	(63)	(3.78)	(2)	-
90	Blue fish.....	3 oz.....	-	18.5	3.6	106			0.021...	0.212...	0.1	~	~	-	(63)	180	(3.78)	-	-
10	Caviar (salmon).....	1 t.....	-	2.6	0.3	13			0.003...	0.030...	0.1	220.00	18.0	~	~	~	~	~	~

Fish (cont'd)	6-10	2.0	13.5	1.5	76	0.123	0.105	4.1	180.00	240.0	20	25	15	1.20	6	5
100 Clams, long, soft shelled.	6-10	2.0	13.5	1.5	76	0.123	0.105	4.1	180.00	240.0	20	25	15	1.20	6	5
60 Cod fish cake.	1, 2 1/2 d.	9.6	6.5	6.4	122	0.011	0.071	0.8	~	~	130	44	49	0.69	tr...	5
30 Cod, fresh.	1 oz.	-	5.0	tr.	20	0.005	0.057	0.27	18.00	108.0	-	12	15	0.69	1	~
90 Cod, fresh.	3 oz.	-	15.0	tr.	60	0.016	0.170	0.81	54.00	324.0	-	36	45	2.07	2	~
30 Cod, salt, dry.	1 oz.	-	8.7	0.2	37	0.008	0.057	tr.	2430.00	48.0	-	-	-	-	-	-
90 Cod, salt, dry.	3 oz.	-	26.1	0.6	110	0.025	0.170	tr.	7290.00	144.0	-	-	-	-	-	-
60 Crab (C)	1/4 c. sc.	0.8	10.1	1.7	59	0.080	0.228	1.2	600.00	66.0	-	135	90	1.30	-	-
90 Crab, fresh, boiled.	3 oz.	0.5	14.5	1.4	73	0.016	0.171	0.9	~	~	-	108	315	2.52	-	-
30 Flounder	1 oz.	-	4.4	0.2	18	0.009	0.059	0.3	~	~	~	21	59	1.14	-	-
90 Flounder	3 oz.	-	13.2	0.5	57	0.027	0.167	0.9	~	~	~	63	177	3.42	-	-
30 Haddock	1 oz.	-	5.2	0.1	21	0.006	0.059	0.3	~	~	2	27	36	0.27	-	-
90 Haddock	3 oz.	-	15.6	0.3	63	0.018	0.177	0.9	~	~	6	81	108	0.81	-	-
30 Halibut	1 oz.	-	5.6	1.6	37	0.003	0.063	0.3	16.80	162.0	3	27	20	0.90	-	-
90 Halibut	3 oz.	-	16.8	4.8	111	0.009	0.189	0.9	50.40	486.0	9	81	60	2.70	-	-
60 Herring, pickled.	2 oz.	-	12.2	9.1	131	0.012	0.130	0.7	~	~	-	-	-	-	-	(1140)
90 Herring, smoked.	3 oz.	-	33.0	14.0	258	0.036	0.396	1.8	~	~	54	44	144	1.89	-	1710
60 Lobster (C)	1/4 c. sc.	0.2	11.0	0.8	52	0.037	0.170	0.8	~	~	-	70	60	-	-	-
60 Lobster, fresh, boiled.	2 oz.	0.3	9.7	1.1	50	0.037	0.170	0.8	126.00	108.0	-	90	75	-	-	-
30 Mackerel	1 oz.	-	6.7	2.3	48	0.006	0.077	0.4	~	~	53	36	-	1.65	-	330
90 Mackerel	3 oz.	-	20.1	6.9	144	0.018	0.221	1.2	~	~	159	108	-	4.95	-	990
30 Oysters, raw.	2 m.	1.1	1.8	0.4	15	0.020	0.052	2.1	21.90	33.0	-	54	69	0.36	1	1.5
90 Oysters, raw.	6 m.	3.3	5.4	1.2	45	0.060	0.156	6.3	65.70	99.0	-	162	207	1.08	2	4.5
30 Salmon, fresh.	1 oz.	-	6.8	4.0	63	0.004	0.073	0.3	14.40	123.0	87	63	42	2.13	3	120
90 Salmon, fresh.	3 oz.	-	20.4	12.0	189	0.012	0.219	0.9	43.20	369.0	261	189	126	6.39	8	360
30 Salmon, red (C)	1 oz.	-	6.2	1.9	41	0.058	0.087	0.4	162.00	90.0	98	9	68	1.95	-	240
90 Salmon, red (C)	3 oz.	-	18.6	5.7	123	0.174	0.261	1.2	486.00	270.0	294	27	204	5.85	-	720
30 Salmon, smoked.	1 oz.	-	6.5	2.8	51	0.020	0.085	0.4	~	~	75	31	38	1.78	-	235
30 Sardines (C)	3 m.	-	7.7	3.3	62	0.011	0.110	0.5	153.00	168.0	-	18	36	1.56	-	321
90 Scallops	4 m.	3.0	13.3	-	65	0.014	0.155	2.7	135.00	378.0	-	-	-	1.26	3	-
90 Shad	3 oz.	-	16.8	8.8	146	0.018	0.194	0.9	~	~	108	86	135	(3.78)	-	-
60 Shrimp (C)	6-8 m.	0.5	10.7	0.5	49	0.045	0.126	1.2	84.00	132.0	36	6	18	1.14	-	90
90 Smelts	2 L.	-	15.8	1.6	78	0.017	0.182	0.9	~	~	-	(63)	113	(3.78)	-	-
60 Tuna	3/4 c.	-	16.6	7.1	130	0.020	0.174	1.0	480.00	144.0	42	24	78	6.36	-	-
90 White fish	3 oz.	-	20.7	6.0	135	0.024	0.237	1.2	~	~	-	(81)	(81)	3.78	-	-

- = None. ~ = No data. tr = Trace. () = Tentative or imputed.

TABLE 22—(Continued)

Grams	Foods	Household Measure	Grams			Calories	Grams		Milligrams			I. U.	Micrograms		Milligrams		I. U.
			Car- bohy- drate	Pro- tein	Fat		Calcium	Phos- phorus	Iron	Sodium	Potas- sium		Vitamin A	Thia- mine	Ribo- flavin	Niacin		Ascor- bic Acid	Vita- min D
Flour and Flour Products																	
10	Cornstarch.....	1 T.....	8.7	tr...	tr...	35	tr...	tr...	tr...	0.40	0.4	—	—	—	—	—	—
50	Doughnut.....	1 av.....	26.5	3.5	10.5	215	0.035	0.070	0.5	—	—	100	37	75	0.80	—	—
112	Flour, barley.....	1 e.....	86.1	11.4	1.9	407	—	—	—	—	—	—	—	—	—	—	—
120	Flour, buckwheat.....	1 e.....	95.6	7.6	1.3	425	0.013	0.106	1.2	1.20	816.0	—	372	96	2.52	—	—
105	Flour, cake or pastry.....	1 e. (sifted).....	82.4	8.7	0.8	372	0.020	0.098	0.8	—	—	—	74	32	0.84	—	—
120	Flour, graham.....	1 e.....	86.9	15.6	2.4	432	0.047	0.437	4.4	2.40	348.0	—	500	180	2.20	—	—
130	Flour, pancake (Aunt Jemima).....	1 e.....	93.3	13.5	1.6	442	0.632	1.034	2.7	—	—	—	195	65	1.69	—	—
120	Flour, rye.....	1 e.....	94.2	10.7	1.1	430	0.022	0.334	1.6	1.20	1032.0	—	180	84	1.08	—	—
100	Flour, soy bean, full fat.....	1 e.....	11.4	36.0	20.6	375	0.195	0.553	12.1	—	—	140	770	280	2.20	—	—
8	Flour, white enr., all purpose.....	1 T.....	6.0	0.9	0.1	29	0.001	0.007	0.2	0.08	6.9	—	35	21	0.28	—	—
100	Flour, white enr., all purpose.....	1/2 e.....	75.9	10.8	0.9	355	0.019	0.093	2.9	1.00	86.0	—	440	260	3.50	—	—
112	Flour, white enr., all purpose.....	1 e. (sifted).....	85.0	12.1	1.0	397	0.021	0.104	3.2	1.12	96.3	—	493	296	3.92	—	—
130	Flour, whole wheat.....	1 e. (unsifted).....	94.1	17.0	2.6	468	0.049	0.501	4.9	2.40	348.0	—	728	156	7.28	—	—
50	Griddle cakes, white.....	1, 4" d.....	11.0	2.4	2.4	76	0.032	0.038	0.4	—	—	110	62	78	0.42	—	2
30	Macaroni, dry.....	1/2 c. (1/2 c. cooked).....	22.0	4.0	0.4	108	0.007	0.043	0.4	0.30	48.0	—	39	24	0.63	—	—
30	Noodles, egg, dry.....	1/2 c. (1/2 c. cooked).....	21.2	4.3	1.5	116	0.007	0.047	0.6	—	—	(60)	39	36	0.63	—	—
30	Spaghetti, dry.....	1/2 c. (1/2 c. cooked).....	22.2	4.0	0.4	108	0.007	0.043	0.4	0.30	48.0	—	39	24	0.63	—	—
60	Waffles.....	1, 6" d.....	21.7	5.0	13.0	224	0.059	0.081	1.0	—	—	167	130	166	0.83	—	10
Fruits—Canned																	
100	Apple juice.....	1/2 e.....	13.0	0.1	—	52	0.008	—	0.4	4.00	100.0	57	20	—	—	1	—
100	Apple sauce.....	1/2 e.....	19.7	0.2	0.1	80	0.004	0.006	0.2	0.30	55.0	(60)	10	10	tr...	1	—
100	Apricots.....	4 sm. H., 1 T. J.....	21.4	0.6	0.1	89	0.010	0.015	0.3	2.00	65.0	1350	20	20	0.30	4	—
100	Blackberries.....	1/2 e. sc.....	19.1	0.7	0.7	86	0.019	0.019	0.6	—	—	50	9	42	0.18	3	—
100	Blueberries.....	1/2 c. sc.....	26.0	0.4	0.4	109	0.010	0.008	0.5	—	—	169	18	42	0.18	8	—
100	Cherries, maraschino.....	10-12.....	51.9	0.4	0.1	210	0.008	0.011	0.2	—	—	350	30	20	0.08	3	—
100	Cherries, red.....	1/2 c.....	28.5	0.6	0.1	117	0.011	0.014	0.3	0.80	77.0	430	30	20	0.08	3	—
100	Cherries, white.....	1/2 c.....	20.8	0.6	0.1	86	0.011	0.014	0.3	3.00	55.0	12	30	20	0.08	3	—
20	Cranberry sauce.....	1 T.....	10.3	0.02	0.06	42	0.002	0.002	0.06	0.20	3.4	2	—	—	—	1	—

Fruits—Canned (cont'd)

100	Figs.....	1 c. sc.....	30.0	0.8	0.3	126	0.035	0.020	0.4	1.00	105.0	45	45	38	0.11	—
100	Fruit cocktail.....	1 c. sc.....	18.6	0.4	0.2	78	0.009	0.012	0.4	9.00	160.0	160	10	10	0.04	2
100	Grapefruit.....	1 c. sc.....	19.1	0.6	0.2	81	0.013	0.014	0.3	—	—	tr.	30	20	0.20	30
100	Grapefruit juice, unsweetened.....	1 c. sc.....	9.4	0.5	0.2	41	0.008	0.012	0.4	(0.40)	(150.0)	tr.	30	20	0.22	35
100	Grape juice, comm.....	1 c. sc.....	18.5	0.4	—	76	0.011	0.010	0.3	1.00	120.0	—	20	10	—	2
100	Loganberries.....	1 c. sc.....	12.5	0.1	0.1	55	0.019	0.017	1.5	—	—	—	20	42	0.18	33
100	Orange juice, unsweetened.....	1 c. sc.....	12.9	0.6	0.1	55	0.033	0.023	0.4	0.50	190.0	..(100)	70	20	0.20	42
100	Orange and grapefruit juice, unsweetened.....	1 c. sc.....	12.0	0.6	0.2	52	0.020	0.017	0.4	—	—	40	40	20	0.21	38
100	Peaches.....	2 H., 1 T. J.....	18.2	0.4	0.1	75	(0.005)	(0.014)	(0.4)	5.00	31.0	450	10	20	0.70	4
100	Pears.....	2 H., 1 T. J.....	18.4	0.2	0.1	75	(0.008)	(0.010)	(0.2)	8.00	52.0	tr.	10	20	0.10	2
100	Pineapple.....	1 sl., 1/4 th., 1 T. J.....	21.0	0.4	0.1	87	0.029	0.007	0.6	1.00	120.0	80	70	20	0.20	9
100	Pineapple juice.....	1 c. sc.....	13.0	0.3	0.1	54	0.015	0.008	0.5	0.50	140.0	80	50	20	0.20	9
100	Plums.....	2 m., 2 T. J.....	20.4	0.4	0.1	84	0.008	0.012	1.1	18.00	110.0	(230)	30	30	0.40	1
100	Prune juice.....	1 c. sc.....	19.3	0.4	—	79	0.005	0.023	1.4	2.00	260.0	1200	50	—	0.42	—
100	Raspberries.....	1 c. sc.....	27.8	0.6	0.5	118	0.024	0.022	0.5	—	—	100	20	40	—	10
Fruits—Dried—Edible Portion																
30	Apricots.....	4-6 H.....	20.0	1.6	0.1	88	0.026	0.036	1.5	3.30	510.0	2229	3	48	0.99	4
30	Currants.....	2 T.....	21.4	0.7	0.2	90	0.023	0.041	0.8	6.60	219.0	30	42	30	0.16	1
30	Dates.....	3-4.....	22.6	0.7	0.2	95	0.022	0.018	0.6	0.30	237.0	50	24	14	0.65	—
30	Figs.....	2 sm.....	20.2	1.2	0.4	90	0.067	0.031	0.9	10.20	234.0	21	39	32	0.52	—
30	Peaches.....	2 H.....	20.8	0.9	0.2	89	0.013	0.038	2.1	3.60	330.0	975	3	60	1.62	6
30	Prunes.....	3 m.....	21.3	0.7	0.2	90	0.016	0.026	1.2	1.80	180.0	567	30	48	0.51	tr.
30	Raisins, seeded and seedless.....	2 T.....	21.4	0.7	0.2	90	0.023	0.039	1.0	6.30	216.0	15	45	24	0.15	tr.
Fruits—Fresh—5% Edible Portion																
100	Average figure.....	1 s.....	5.0	0.5	—	22	—	—	—	—	—	—	—	—	—	—
100	Avocado.....	1 m.....	5.0	1.7	26.4	265	0.010	0.038	0.6	3.00	340.0	290	120	150	1.10	16
100	Cantaloupe (muskmelon).....	1 m.....	4.6	0.6	0.2	23	0.017	0.016	0.4	12.00	230.0	3420	60	40	0.80	33
100	Rhubarb, raw.....	1 c. cu.....	3.8	0.5	0.1	18	0.051	0.025	0.5	1.00	70.0	30	10	—	0.10	9
100	Rhubarb, stewed without sugar.....	1 c. sc.....	3.8	0.5	0.1	18	0.051	0.025	0.5	(1.00)	(70.0)	30	10	—	0.10	4
100	Watermelon.....	1 sm. sl. (1/4 c. cu.).....	7.0	0.5	0.2	31	0.007	0.012	0.2	0.30	110.0	590	50	50	0.20	6

— = None. ∞ = No data. tr = Trace. () = Tentative or imputed.

|| Calcium may not be available because of presence of oxalic acid.

TABLE 22—(Continued)

Grams	Foods	Household Measure	Grams			Calories	Grams			Milligrams			I.U.		Micrograms		Milligrams		I.U.
			Car- bohy- drate	Pro- tein	Fat		Calcium	Phos- phorus	Iron	Sodium	Potas- sium	Vitamin A	Thia- mine	Ribo- flavin	Niacin	Ascor- bic Acid			
Fruits—Fresh—10% Edible Portion																			
100	Average figure.....	1 s.....	10.0	1.0	—	44	0.004	0.006	0.2	—	—	—	60	10	10	tr...	1	—	—
100	Apple sauce, without sugar....	$\frac{1}{2}$ c. sc.....	10.9	0.2	0.2	46	0.032	0.032	0.9	0.20	150.0	0.20	90	25	(70)	0.30	10	—	—
100	Blackberries.....	$\frac{2}{3}$ -1 c.....	12.0	1.2	1.1	62	0.014	0.011	0.6	1.00	65.0	—	40	—	—	(0.13)	12	—	—
100	Cranberries.....	1 c.....	11.3	0.4	0.7	53	0.002	0.002	0.06	(0.20)	(3.4)	—	2	—	—	—	(1)	—	—
20	Cranberry sauce, without sugar	1 T.....	10.3	tr...	tr...	42	0.035	0.036	0.9	2.00	160.0	—	120	40	—	—	45	—	—
100	Currants, red.....	$\frac{1}{2}$ c.....	12.7	1.6	0.4	61	0.022	0.028	0.5	0.70	87.0	—	380	150	—	—	35	—	—
100	Gooseberries.....	$\frac{2}{3}$ c.....	10.0	0.8	0.4	47	0.017	0.018	0.3	0.50	200.0	—	tr...	40	20	0.20	40	—	—
100	Grapefruit.....	$\frac{1}{2}$ m.....	10.0	0.5	0.2	44	0.017	0.016	0.4	—	—	—	10	50	—	0.30	20	—	—
100	Honeydew melon.....	$\frac{1}{4}$, 5" melon.....	8.0	0.6	0.2	36	0.017	0.016	0.4	—	—	—	—	40	tr...	0.10	45	—	—
100	Lemon.....	1 L.....	8.7	1.0	0.6	44	(0.014)	(0.010)	(0.1)	0.70	130.0	—	—	40	tr...	0.08	45	—	—
100	Lemon juice.....	$\frac{1}{2}$ c. sc.....	8.3	—	—	33	(0.014)	(0.010)	(0.1)	(0.70)	(130.0)	—	—	40	tr...	0.08	45	—	—
100	Orange.....	1 sm.....	11.2	1.0	0.2	50	0.033	0.023	0.4	0.30	170.0	—	(190)	80	30	0.20	49	—	—
100	Orange juice.....	$\frac{1}{2}$ c. sc.....	10.1	—	—	40	0.033	0.023	0.4	(0.30)	(170.0)	—	(190)	80	30	0.20	49	—	—
100	Peach, yellow.....	1 m.....	12.0	0.5	0.1	51	0.008	0.022	0.6	0.50	160.0	—	880	20	50	0.90	8	—	—
100	Strawberries.....	10 L.....	8.0	0.8	0.6	41	0.028	0.027	0.8	0.80	180.0	—	60	30	70	0.30	60	—	—
100	Tangerine.....	2 sm.....	11.0	0.8	0.3	50	(0.033)	(0.023)	(0.4)	2.00	110.0	—	420	70	30	0.20	31	—	—
Fruits—Fresh—15% Edible Portion																			
100	Average figure.....	1 s.....	15.0	0.5	—	58	0.006	0.010	0.3	0.10	71.0	—	90	40	20	0.20	5	—	—
100	Apple.....	1 sm.....	15.0	0.3	0.4	64	0.016	0.023	0.5	0.60	440.0	—	2790	30	40	0.70	4	—	—
100	Apricots.....	3 sm.....	13.0	1.0	0.1	57	0.016	0.013	0.8	0.60	89.0	—	280	(30)	(70)	(0.30)	16	—	—
100	Blueberries.....	$\frac{2}{3}$ c.....	15.0	0.6	0.6	68	0.016	0.013	0.8	0.60	89.0	—	280	50	60	0.13	14	—	—
100	Cherries, sweet.....	25 sm.....	17.8	1.1	0.5	80	0.017	0.022	0.5	1.00	260.0	—	15-1300	50	60	0.13	14	—	—
100	Grapes, American.....	22-24 av.....	15.0	1.4	1.4	78	0.017	0.021	0.6	3.00	81.0	—	80	50	30	0.40	4	—	—
100	Grapes, green seedless.....	60 av.....	16.7	0.8	0.4	74	0.013	0.020	0.9	4.00	180.0	—	50	30	30	0.40	3	—	—
100	Grapes, Malaga or Tokay.....	20 av.....	16.7	0.8	0.4	74	0.010	0.020	0.6	0.70	160.0	—	80	30	40	—	2	—	—
100	Nectarine.....	2 m.....	16.0	0.5	0.1	67	0.004	0.024	0.5	2.00	320.0	—	1500	72	—	—	24	—	—
100	Pear.....	1 m.....	15.8	0.7	0.4	70	0.013	0.016	0.3	2.00	100.0	—	20	40	40	0.10	4	—	—
100	Pincapple.....	1 sl., $\frac{3}{4}$ "th.....	13.7	0.4	0.2	58	0.016	0.011	0.3	0.30	210.0	—	130	80	20	0.20	24	—	—
100	Plums.....	3 m.....	13.0	0.7	0.2	56	0.017	0.020	0.5	0.60	170.0	—	350	150	(30)	0.60	5	—	—
100	Raspberries, red.....	$\frac{2}{3}$ c.....	14.4	1.1	0.6	67	0.040	0.037	0.9	0.50	130.0	—	150	30	70	—	25	—	—

Fruits—Fresh—20% Edible Portion		1 s.	20.0	1.4	0.4	89	0.050	0.035	0.7	2.00	190.0	75	90	80	0.60	2
100	Average figure	4 L.	19.6	1.4	0.4	88										
100	Figs															
Fruits—Fresh—Over 20% Edible Portion		1 s.	25.0	1.0	—	104										
100	Average figure	1 m.	23.0	1.2	0.2	99	0.008	0.028	0.6	0.50	420.0	430	90	60	0.60	10
100	Banana	1 m.	33.5	0.8	0.4	141	0.022	0.021	0.3	0.60	310.0	100	—	—	—	43
100	Persimmon	1/2, 3" d.	21.0	1.5	1.2	100	0.012	0.037	1.2	0.30	200.0	—	—	—	0.10	5
100	Pomegranate	1/2 of 1 L.														
Fruits—Strained—Canned		1/2 c.	19.7	0.2	0.1	80	0.004	0.006	0.2	—	—	(60)	10	10	tr.	1
100	Apple sauce, Heinz	1/2 c.	14.4	0.6	0.1	61	0.012	0.019	1.3	—	—	4100	21	45	tr.	2
100	Apricots and apple sauce, Heinz	1/2 c.	17.2	0.8	—	72	0.004	0.024	1.9	—	—	1086	20	44	0.56	3
100	Peaches, Gerber's	1/2 c.	14.6	0.4	—	60	0.012	0.016	0.7	—	—	73	16	36	0.30	1
100	Pears, Gerber's	1/2 c.	13.6	0.4	—	56	0.016	0.012	3.5	—	—	73	28	24	—	1
100	Pears and pineapple, Gerber's	1/2 c.	28.2	1.1	0.2	119	0.033	0.032	1.8	—	—	800	42	140	—	9
100	Prunes, Heinz	1/2 c.														
Meat and Poultry																
30	Bacon, ck. crisp	3 sl., 5" long	0.5	4.2	8.1	93	0.006	0.048	0.3	720.00	117.0	—	180	30	0.87	—
30	Bacon, uncooked	2 sl., 7" long	0.3	2.7	19.5	188	0.004	0.032	0.2	204.00	33.0	—	126	30	0.62	—
90	Beef, corned	3 oz.	—	14.1	22.5	258	0.009	0.153	2.1	1170.00	54.0	—	45	90	1.53	—
30	Beef, dried	1 oz.	—	10.3	1.9	58	0.006	0.111	1.5	1290.00	60.0	—	33	66	1.11	—
30	Beef, lean	1 oz.	—	5.6	4.2	60	0.003	0.061	0.8	15.30	108.0	—	36	45	1.53	—
90	Beef, lean	3 oz.	—	16.8	12.6	181	0.009	0.183	2.5	45.90	324.0	—	108	135	4.59	—
30	Beef, m. fat	1 oz.	—	5.5	5.4	71	0.003	0.059	0.8	—	—	—	33	42	1.47	—
90	Beef, m. fat	3 oz.	—	16.5	16.2	213	0.009	0.177	2.4	—	—	—	99	126	4.41	—
30	Bologna	1 L. sl., 1 1/2" th.	1.1	4.4	4.8	65	0.003	0.048	0.7	390.00	69.0	—	93	90	0.90	—
90	Brain, av.	3 oz.	—	9.5	8.5	115	0.009	0.081	2.1	(135.00)	(306.0)	—	207	126	3.15	12
30	Chicken, dark meat	1 oz.	—	6.3	1.4	38	0.005	0.087	1.2	33.00	75.0	—	72	78	1.95	1
30	Chicken, light meat	1 oz.	—	7.0	1.0	37	0.005	0.069	1.0	23.40	96.0	—	48	24	2.16	1
20	Deviled meat, Libby	1 r. T.	—	3.4	2.1	33	0.012	0.020	1.3	—	—	—	tr.	tr.	tr.	—
60	Frankfort	1, 5 1/2" long	2.0	9.1	8.5	121	0.005	0.098	1.4	660.00	132.0	—	111	135	1.23	—
20	Ham, deviled	1 r. T.	—	5.7	12.9	137	0.003	0.061	0.9	—	—	—	141	48	1.24	—
30	Ham, fresh	1 oz.	—	4.6	9.3	102	0.003	0.049	0.7	(17.40)	(78.0)	—	288	57	1.23	—

- = None. ~ = No data. tr = Trace. () = Tentative or imputed.

TABLE 22—(Continued)

Grams	Foods	Household Measure	Grams			Calories	Grams		Milligrams			I.U.	Micrograms		Milligrams		I.U.
			Car- bohy- drate	Pro- tein	Fat		Calcium	Phos- phous	Iron	Sodium	Potas- sium		Vitamin A	Thia- mine	Ribo- flavin	Niacin		Ascor- bic Acid	Vita- min D
Meat and Poultry (cont'd)																	
90	Ham, fresh	3 oz.	—	13.8	27.9	306	0.009	0.147	2.1	(52.20)	(234.0)	—	864	171	3.69	—	—
30	Ham, smoked	1 oz.	—	5.1	10.5	115	0.003	0.055	0.7	330.00	102.0	—	234	57	1.14	—	—
90	Ham, smoked	3 oz.	—	15.3	31.5	345	0.009	0.165	2.1	990.00	306.0	—	702	171	3.42	—	—
90	Heart, av.	3 oz.	—	14.9	5.7	111	0.009	0.212	5.6	(81.00)	(144.0)	—	486	810	6.12	13	—
90	Kidney, av.	3 oz.	—	15.0	4.7	102	0.014	0.258	5.9	(189.00)	(279.0)	846	288	1800	3.39	10	—
30	Lamb, lean	1 oz.	—	5.1	4.4	60	0.003	0.055	0.8	23.40	114.0	—	60	75	1.68	—	—
90	Lamb, lean	3 oz.	—	15.3	13.2	180	0.009	0.165	2.4	70.20	342.0	—	180	225	5.04	—	—
30	Lamb, m. fat	1 oz.	—	4.7	8.3	94	0.003	0.051	0.7	—	—	—	54	69	1.56	—	—
90	Lamb, m. fat	3 oz.	—	14.1	24.9	282	0.009	0.153	2.1	—	—	—	162	207	4.68	—	—
30	Liver, beef	1 oz.	1.8	6.0	1.0	40	0.003	0.112	3.6	—	—	5760	81	840	4.83	9	14
90	Liver, beef	3 oz.	5.4	18.0	3.0	121	0.010	0.336	10.8	—	—	17280	243	2520	14.49	28	42
30	Liver, calves	1 oz.	1.2	5.7	1.5	41	0.003	0.064	1.6	33.00	114.0	3000	57	990	4.50	8	5
90	Liver, calves	3 oz.	3.6	17.1	4.5	123	0.010	0.192	4.9	99.00	342.0	9000	171	2970	13.50	24	15
30	Liver, chicken	1 oz.	0.8	6.6	1.2	41	0.024	0.096	2.2	—	—	7200	120	750	5.40	10	15
30	Liver, lamb	1 oz.	0.9	6.3	1.2	40	0.004	0.075	2.0	—	—	12000	123	798	4.50	12	6
90	Liver, lamb	3 oz.	2.7	18.9	3.6	120	0.012	0.225	6.0	—	—	36000	369	2394	13.50	36	18
30	Liver, pork	1 oz.	0.5	5.9	1.4	38	0.002	0.110	7.5	23.10	105.0	3000	156	810	3.90	7	14
90	Liver, pork	3 oz.	1.5	17.7	4.2	114	0.006	0.330	22.5	69.30	315.0	9000	468	2430	11.70	21	42
20	Liver spread, Libby	1 r. T.	0.2	3.5	4.0	51	0.010	0.035	1.7	—	—	tr.	tr.	tr.	tr.	—	—
30	Pork, lean	1 oz.	—	4.2	10.5	111	0.002	0.046	0.6	17.40	78.0	—	267	54	1.14	—	—
90	Pork, lean	3 oz.	—	12.6	31.5	333	0.006	0.138	1.8	52.20	234.0	—	801	162	3.42	—	—
30	Pork, m. fat	1 oz.	—	3.6	11.5	123	0.002	0.038	0.5	—	—	—	225	45	0.96	—	—
90	Pork, m. fat	3 oz.	—	10.8	34.5	369	0.006	0.114	1.5	—	—	—	675	135	2.88	—	—
30	Pork, salt	1 oz.	—	1.2	25.5	234	—	0.013	0.2	540.00	8.1	—	54	12	0.27	—	—
60	Sausage, pork	3, 3" long	—	6.5	26.9	268	0.004	0.070	1.0	444.00	84.0	—	130	90	1.40	—	—
90	Sweetbread	3 oz.	—	13.7	11.9	162	—	—	—	51.30	216.0	15	36	—	2.79	39	—
90	Tongue, av.	3 oz.	—	15.0	14.0	186	0.027	0.107	6.2	90.00	234.0	—	198	243	4.50	—	—
30	Turkey, dark meat	1 oz.	—	7.0	2.8	53	0.007	0.126	1.8	27.60	93.0	—	53	78	1.95	—	—
30	Turkey, light meat	1 oz.	—	7.4	1.4	42	0.007	0.111	1.6	12.00	96.0	—	36	24	2.16	—	—

Meat and Poultry (cont'd)

30	Veal, lean.	1 oz.	-	6.0	2.4	45	0.003	0.064	0.9	14.40	99.0	-	54	84	1.95	-
90	Veal, lean.	3 oz.	-	18.0	7.2	135	0.009	0.192	2.7	43.20	297.0	-	162	252	5.85	-
30	Veal, m. fat.	1 oz.	-	5.7	3.0	50	0.003	0.062	0.9	-	-	-	51	81	1.89	-
90	Veal, m. fat.	3 oz.	-	17.1	9.0	150	0.009	0.186	2.7	-	-	-	153	243	5.67	-
Miscellaneous																
20	Catsup.	1 T.	5.0	0.5	-	22	0.003	0.004	0.2	260.00	160.0	376	18	14	0.44	2
20	Chili sauce.	1 T.	4.8	0.6	tr.	22	-	-	-	-	-	-	-	-	-	-
	Chop suey, soy sauce.	½ c.	7.8	10.7	21.4	266	0.026	0.127	1.9	-	-	68	410	120	2.40	12
50	Doughnut.	1 av.	26.5	3.5	10.5	215	0.035	0.070	0.5	-	-	100	37	75	0.80	-
	Frankfort and roll, comm.	1	23.1	10.1	8.7	212	0.026	0.114	1.7	-	-	-	190	160	2.00	-
	Gravy, with water.	1 T.	0.8	0.1	1.8	19	tr.	0.001	tr.	-	-	-	tr.	tr.	tr.	-
	Hamburg and roll, comm.	1	21.6	11.5	10.5	228	0.027	0.128	1.9	-	-	-	130	120	2.90	-
100	Hash, corned beef (C)	½ c.	7.0	15.1	6.1	143	0.026	0.090	1.3	540.00	200.0	-	20	130	2.40	-
15	Horse-radish.	1 T.	-	-	-	-	-	-	-	14.40	43.5	-	-	-	-	-
5	Mustard, prepared.	1 t.	0.3	0.2	0.2	4	0.005	0.005	tr.	65.00	6.5	-	-	-	-	-
10	Olive, green.	1 m.	0.4	0.2	1.4	15	0.010	0.002	0.2	240.00	5.5	42	tr.	-	-	-
10	Olive, ripe.	2 sm.	0.3	-	2.0	19	0.012	0.001	0.3	98.00	2.3	35	1	-	-	2
30	Peanut butter.	2 T.	5.0	9.0	14.0	182	0.020	0.118	0.6	36.00	246.0	-	60	48	4.86	-
100	Pickles, dill.	1 L.	2.0	0.5	0.2	11	0.024	0.022	0.9	1400.00	200.0	190	10	20	tr.	7
30	Pickles, sweet.	1 sm.	0.6	0.2	0.1	3	0.007	0.007	0.3	-	-	57	tr.	10	tr.	2
60	Waffle.	1, 6" d.	21.7	5.0	13.0	224	0.059	0.081	1.0	-	-	167	130	166	0.83	10
	White sauce, thin.	½ c.	4.5	2.3	5.0	72	0.071	0.058	0.1	-	-	160	33	107	0.13	1
	White sauce, medium.	½ c.	6.0	2.6	7.7	103	0.071	0.059	0.2	-	-	225	41	112	0.20	2
Nuts																
30	Almonds.	24-30.	5.8	5.6	16.2	192	0.076	0.142	1.4	0.90	207.0	-	76	202	1.38	tr.
30	Almonds, salted.	20-24.	5.6	5.4	16.0	188	0.076	0.142	1.4	48.00	213.0	-	76	202	1.38	tr.
30	Brazil nuts.	4.	3.4	4.4	19.8	208	0.038	0.180	0.8	0.30	201.0	4	300	-	-	-
30	Cashews.	16.	8.0	5.8	14.2	184	0.014	0.144	-	4.20	168.0	-	46	58	-	-
30	Coconut, dried.	5 T.	16.0	1.0	11.8	174	0.012	0.058	1.0	4.80	231.0	-	tr.	tr.	tr.	-
30	Filberts.	25.	5.4	3.8	18.2	200	0.086	0.106	1.2	0.30	168.0	82	120	-	-	-
30	Peanuts, roasted.	32-34.	7.0	8.0	13.2	178	0.022	0.118	0.6	0.60	222.0	-	90	48	4.86	-
30	Peanut butter.	2 T.	5.0	9.0	14.0	182	0.020	0.118	0.6	36.00	246.0	-	60	48	4.86	-
30	Pecans.	19-24 H.	4.0	2.8	22.0	226	0.022	0.098	0.8	0.10	126.0	16	216	34	0.26	tr.
30	Walnuts, English.	16-32 H., 2½ T. ch.	4.6	4.6	19.4	212	0.024	0.114	0.6	0.60	135.0	18	154	40	0.36	tr.

- = None. ~ = No data. tr = Trace. () = Tentative or imputed.

TABLE 22—(Continued)

Grams	Foods	Household Measure	Grams			Calories	Grams			Milligrams			I.U.		Micrograms		Milligrams		I.U.
			Car- bohy- drate	Pro- tein	Fat		Calcium	Phos- phorus	Iron	Sodium	Potas- sium	Vitamin A	Thia- mine	Ribo- flavin	Niacin	Ascor- bic Acid			
Soups																			
156	Asparagus, Campbell's.....	$\frac{1}{2}$ cn.....	12.9	3.3	3.5	96	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
156	Beef, Campbell's.....	$\frac{1}{2}$ cn.....	15.5	12.2	3.8	144	.....	.....	.....	.....	.....	1279.20	312.0	.....	.....	.....	.....	.....	.....
156	Bouillon, Campbell's.....	$\frac{1}{2}$ cn.....	4.7	8.1	—	51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
156	Chicken, Campbell's.....	$\frac{1}{2}$ cn.....	5.8	5.3	3.8	78	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
156	Chicken gumbo, Campbell's.....	$\frac{1}{2}$ cn.....	12.2	4.7	2.5	90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
156	Chicken noodle, Campbell's.....	$\frac{1}{2}$ cn.....	10.8	6.3	4.4	107	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
156	Chowder, clam, Heinz.....	$\frac{1}{2}$ cn.....	15.9	3.5	2.5	100	0.036	0.060	0.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
156	Consomme, Campbell's.....	$\frac{1}{2}$ cn.....	3.8	9.9	—	55	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
156	Mushroom, cream, Heinz.....	$\frac{1}{2}$ cn.....	14.4	5.5	8.1	152	0.106	0.148	0.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
325	Oyster stew, homemade.....	$1\frac{1}{2}$ c., 8 oz. milk, 1 pat butter	15.5	14.3	18.7	287	0.353	0.397	7.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
156	Pea, green, Campbell's.....	$\frac{1}{2}$ cn.....	16.0	4.7	3.9	128	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
156	Tomato, Campbell's.....	$\frac{1}{2}$ cn.....	18.7	2.8	3.3	126	.....	.....	.....	.....	.....	1185.60	343.2	.....	.....	.....	.....	.....	.....
156	Vegetable beef, Heinz.....	$\frac{1}{2}$ cn.....	22.2	4.5	1.4	119	0.038	0.067	0.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
156	Vegetable, Campbell's.....	$\frac{1}{2}$ cn.....	22.5	6.0	3.1	142	.....	.....	.....	.....	.....	1185.60	374.4	.....	.....	.....	.....	.....	.....
140	Vegetable, homemade.....	$\frac{3}{4}$ c.....	11.6	4.6	4.2	103	0.031	0.045	0.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sweets and Candy																			
57	Bar candies, av. of 10 popular choc. coated bars	1, 2 oz. bar.....	34.9	5.2	13.0	277	0.050	0.100	1.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	Caramel, plain.....	1 m.....	7.8	0.2	1.2	43	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	Chocolate, bitter.....	1 sq.....	(5.4)	(1.6)	15.9	171	(0.095)	(0.103)	0.8	.....	.....	1.20	249.0	.....	.....	.....	.....	.....	.....
13	Chocolate, cream.....	1 av.....	9.4	0.5	1.8	56	0.003	0.010	0.06	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
46	Chocolate, Hershey, bitter- sweet	1, 5¢ bar.....	27.4	1.9	15.0	252	0.013	0.066	1.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
35	Chocolate, Hershey, milk, al- mond	1, 5¢ bar.....	17.1	3.1	13.4	201	0.072	0.087	1.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
43	Chocolate, Hershey, milk, plain	1, 5¢ bar.....	23.8	3.2	14.5	238	0.086	0.089	1.1	.....	.....	37.00	180.6	.....	.....	.....	.....	.....	.....
3	Cocoa, dry.....	1 t.....	0.8	0.2	0.5	8	(0.003)	0.018	0.07	.....	.....	0.15	42.0	.....	.....	.....	.....	.....	.....
9	Cocoa, dry.....	1 T.....	2.4	0.6	1.5	24	(0.009)	0.054	0.21	.....	.....	0.45	126.0	.....	.....	.....	.....	.....	.....
11	Fondant, patty or mint.....	1 av.....	10.0	—	—	40	.....	.....	.....	.....	.....	1.10	12.1	.....	.....	.....	.....	.....	.....
30	Fudge.....	1 pc., $1\frac{1}{4}$ " sq.....	18.3	0.4	2.4	96	0.008	0.014	0.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Sweets and Candy (cont'd)														
30	Gumdrop	3 L.	29.5	-	-	118	-	-	-	12.30	5.4	-	-	-
30	Honey	2 T. sc.	24.0	-	-	96	0.002	0.005	0.3	2.10	3.0	-	12	0.06
20	Jam assorted, comm.	1 T.	14.2	0.1	0.06	58	0.004	0.003	0.06	(1.40)	(15.6)	2	4	0.03
20	Jelly assorted, comm.	1 T.	13.0	0.04	-	52	0.003	0.002	0.06	-	-	2	4	0.03
100	Jelly	5 T.	65.0	0.2	-	260	0.015	0.010	0.3	-	-	10	20	0.15
20	Marmalade, orange	1 T.	14.0	0.2	0.08	58	0.004	0.003	0.06	2.60	3.8	-	4	0.01
28	Marshmallow	4 av.	25.0	1.0	-	104	-	-	-	11.50	1.7	-	-	-
20	Molasses	1 T.	12.0	-	-	48	0.055	0.010	1.3	16.00	300.0	-	32	0.56
25	Peanut brittle	1 pc., 2½" sq.	17.0	3.0	4.5	121	0.007	0.039	0.2	-	-	30	17	1.80
20	Sorghum	1 T.	13.4	-	-	54	0.030	0.005	2.4	4.20	120.0	-	-	-
20	Syrup, corn, dark	1 T.	14.8	-	-	59	0.012	0.002	0.6	13.60	0.8	-	-	-
20	Syrup, corn, light	1 T.	14.8	-	-	59	0.002	0.001	0.3	13.60	0.8	-	-	0.04
30	Syrup, maple	1 r. T.	21.5	-	-	86	0.032	0.004	0.9	4.20	39.0	-	-	-
11	Sugar, brown, light or dark	1 T.	10.5	-	-	42	0.010	0.001	0.3	2.60	25.3	-	-	-
11	Sugar, confectioners	1 T.	11.0	-	-	44	-	-	tr.	-	-	-	-	-
15	Sugar, granulated	1 T.	15.0	-	-	60	-	-	-	0.05	0.1	-	-	-
15	Sugar, maple	1 pc., 1" sq.	13.5	-	-	54	0.035	0.003	0.6	-	-	-	-	-
Vegetables—Canned														
100	Asparagus, green	7 st.	3.0	1.6	0.3	21	0.020	0.034	1.0	410.00	130.0	600	60	0.80
100	Beans, baked with pork	½ c., 3 r. T.	19.0	5.7	2.0	117	(0.049)	(0.154)	(3.4)	-	-	-	50	0.88
100	Beans, green, snap	½ c.	3.8	1.0	-	19	0.027	0.019	1.4	410.00	120.0	410	30	0.30
100	Beans, Lima	½ c.	13.5	3.8	0.3	72	0.027	0.073	1.7	310.00	210.0	130	30	0.50
100	Beets	½ c. cu.	8.7	1.0	-	39	0.015	0.029	0.6	36.00	120.0	20	10	0.10
100	Carrots	¾ c. cu.	6.1	0.5	0.4	30	0.022	0.024	0.6	280.00	110.0	12000	30	0.30
100	Corn, sweet, white	½ c.	16.1	2.0	0.5	77	0.004	0.051	0.5	200.00	200.0	tr.	20	0.80
100	Corn, sweet, yellow	½ c.	16.1	2.0	0.5	77	0.004	0.051	0.5	210.00	200.0	200	50	0.80
100	Mushrooms	1 c.	**	**	0.2	2	(0.007)	(0.046)	(0.3)	400.00	150.0	-	(200)	(3.00)
100	Peas	½ c. sc.	12.9	3.4	0.4	69	0.025	0.067	1.8	270.00	96.0	540	60	0.90
100	Pumpkin	½ c. sc.	7.9	1.0	0.3	38	(0.020)	(0.036)	(0.7)	2.00	240.0	3400	60	0.50
100	Sauerkraut	½ c.	3.4	1.1	0.2	20	(0.046)	(0.031)	(0.5)	630.00	140.0	tr.	30	0.22
100	Spinach	½ c.	3.0	2.3	0.4	25	0.090**	0.033	1.6	320.00	260.0	6790	80	0.30
100	Squash, winter	½ c.	7.9	1.0	0.3	38	0.020	0.036	0.7	-	-	(2100)	50	(0.50)
100	Tomatoes	½ c.	3.9	1.0	0.2	21	(0.011)	(0.027)	(0.6)	18.00	130.0	1050	30	0.70
100	Tomato juice	½ c. sc.	4.3	1.0	0.2	23	(0.007)	(0.015)	(0.4)	230.00	230.0	1050	30	0.70
20	Tomato paste	1 T.	4.5	1.1	0.3	25	0.007	0.022	0.7	-	-	(1000)	(20)	tr.

- = None. ~ = No data. () = Tentative or imputed.

tr = Trace.

**May not be nutritionally available.

TABLE 22—Continued

Grams		Foods	Household Measure	Grams			Calories	Grams			Milligrams			Micrograms		I.U.		Milligrams		I.U.
				Carbohy- drate	Pro- tein	Fat		Calcium	Phos- phorus	Iron	Sodium	Potas- sium	Vitamin A	Thia- mine	Ribo- flavin	Niacin	Ascor- bic Acid			
Vegetables—Dried																				
100	Beans, baked without pork.....		$\frac{1}{2}$ c., 3 r. T.....	18.8	6.0	0.4	103	(0.049)	(0.154)	(3.4)	~	~	~	—	50	50	0.88	—	—	
30	Beans, kidney, navy, pea.....		2 T., $\frac{1}{4}$ c. ck.....	18.0	7.0	0.5	105	0.044	0.139	3.1	0.30	390.0	—	180	72	72	0.63	—	—	
30	Beans, Lima.....		2 T., $\frac{1}{4}$ c. ck.....	18.5	6.2	0.4	102	0.020	0.114	2.3	~	~	~	—	180	72	0.63	1	—	
30	Beans, soy.....		2 T., $\frac{1}{4}$ e. ck.....	3.6	10.5	5.4	105	0.068	0.176	2.5	1.20	570.0	—	342	93	93	0.63	tr.	—	
30	Lentils.....		2 $\frac{1}{2}$ T., $\frac{1}{4}$ e. ck.....	18.0	7.4	0.3	104	0.029	0.110	2.5	0.90	360.0	—	135	57	57	0.90	—	—	
30	Peas.....		2 T., $\frac{1}{4}$ e. ck.....	18.5	7.4	0.3	106	0.022	0.119	1.8	12.60	264.0	—	261	87	87	0.90	tr.	—	
Vegetables—Fresh—5% Edible Portion																				
100	Average figure.....		1 s.....	4.0	1.5	—	22	0.022	0.062	1.0	(2.00)	(240.0)	—	160	170	170	1.20	32	—	
100	Asparagus.....		8 st., long.....	4.0	2.0	0.2	24	0.023	0.046	0.8	~	~	~	30	85	100	0.53	15	—	
100	Bean sprouts.....		1 e. sc.....	4.0	2.8	0.2	29	(0.094)	0.045	3.2	130.00	570.0	—	50	170	170	0.30	34	—	
100	Beet greens.....		$\frac{1}{2}$ c. ck.....	5.6	2.0	0.3	33	0.130	0.076	1.3	16.00	400.0	—	90	210	210	0.90	118	—	
100	Broccoli, entire plant.....		$\frac{1}{2}$ c. ck.....	5.5	3.3	0.2	37	0.046	0.031	0.5	5.00	230.0	—	70	60	60	0.30	52	—	
100	Cabbage, head.....		$\frac{1}{4}$ 1 e. ck.....	5.3	1.4	0.2	29	0.050	0.054	1.0	(5.00)	(230.0)	—	30	46	46	—	40	—	
100	Cabbage, Chinese.....		1 c.....	2.4	1.4	0.2	16	0.053	0.032	0.57	~	~	~	~	~	~	~	~	~	
100	Cabbage, red or purple.....		1-1 $\frac{1}{2}$ c.....	3.5	1.7	—	20	0.022	0.072	1.1	24.00	400.0	—	90	100	110	0.60	69	—	
100	Cauliflower.....		$\frac{1}{4}$ e. ck.....	5.0	2.4	0.2	31	0.072	0.016	0.6	110.00	300.0	—	10	30	40	0.30	8	—	
100	Celery, bleached.....		4 st.....	4.0	1.4	0.2	22	(0.100)††	0.036	4.0	210.00	720.0	—	2800	60	130	0.20	38	—	
100	Chard, Swiss.....		$\frac{1}{2}$ c. ck.....	4.4	1.4	0.2	25	0.074	0.038	1.7	(18.00)	(400.0)	—	3600	60	200	0.37	13	—	
100	Chicory.....		30-40 inner lvs.....	4.0	1.6	0.2	24	0.010	0.022	0.4	0.90	230.0	—	—	40	90	0.20	8	—	
100	Cucumber.....		1 m.....	3.0	1.0	0.1	16	0.015	0.037	0.4	0.90	190.0	—	30	70	60	0.80	5	—	
100	Egg plant.....		$\frac{1}{2}$ e. ck.....	5.5	1.1	0.2	28	0.074	0.038	1.7	18.00	400.0	—	3600	60	200	0.37	13	—	
100	Endive.....		30-40 inner lvs.....	4.0	1.6	0.2	24	0.074	0.038	1.7	~	~	~	10000	50	200	0.38	16	—	
100	Escarole.....		4 lvs.....	4.0	2.0	0.2	26	0.074	0.038	1.8	~	~	~	7540	120	350	0.80	115	—	
100	Kale.....		$\frac{1}{2}$ 3 c. ck.....	7.2	4.0	0.6	50	0.225	0.062	2.2	110.00	410.0	—	1620	60	70	0.20	20	—	
100	Lettuce, green leaf.....		10 lvs.....	3.0	1.0	0.2	16	0.060	0.020	1.0	7.00	230.0	—	540	60	70	0.20	10	—	
100	Lettuce, head.....		$\frac{1}{4}$ hd.....	3.0	1.0	0.2	16	0.020	0.030	0.5	12.00	140.0	—	630	70	40	0.40	120	—	
100	Pepper, green.....		1 m.....	5.7	1.2	0.2	29	0.011	0.025	0.4	0.60	170.0	—	30	40	40	0.10	20	—	
100	Radish.....		10.....	4.0	1.0	0.1	20	0.037	0.031	1.0	9.00	260.0	—	9420	120	240	0.70	59	—	
100	Spinach.....		$\frac{1}{2}$ c. ck.....	3.2	2.3	0.3	25	(0.078)††	0.055	3.0	82.00	780.0	—	—	—	—	—	—	—	

Vegetables—Fresh—5% Edible Portion																	
100	Squash, summer.....	½ c. ck.....	4.0	0.6	0.1	-19	0.015	0.015	0.015	0.4	0.60	200.0	260	40	50	1.10	17
100	Tomato.....	1 m.....	4.0	1.0	0.3	23	0.011	0.027	0.6	3.00	230.0	1100	60	40	40	0.60	23
100	Watercress.....	1 sm. bunch.....	3.0	2.0	0.3	23	0.170	0.046	3.0	~	~	3000	100	220	~	~	50
Vegetables—Fresh—10% Edible Portion																	
100	Average figure.....	1 s.....	8.5	2.0	-	42	~	~	~	~	~	~	~	~	~	~	~
100	Artichoke, French.....	½ L.....	12.0	3.0	0.4	63	0.039	0.089	1.0	(43.00)	(430.0)	190	95	29	~	~	9
100	Beans, green string.....	½ c.....	7.7	2.4	0.2	42	0.065	0.044	1.1	(0.90)	300.0	630	80	100	0.60	19	~
100	Beets.....	2 m.....	9.6	1.6	0.1	46	0.027	0.043	1.0	110.00	350.0	20	30	50	0.40	10	~
100	Brussels sprouts.....	10-11 av.....	9.0	4.4	0.5	58	0.034	0.078	1.3	11.00	450.0	400	110	60	0.30	94	~
100	Carrots.....	1 L.....	9.3	1.2	0.3	45	0.039	0.037	0.8	31.00	410.0	12000	70	60	0.50	6	~
100	Dandelion greens.....	½ c.....	8.8	2.7	0.7	52	0.187	0.070	3.1	76.00	430.0	13650	190	140	0.80	36	~
100	Okra.....	10 pods.....	7.4	1.8	0.2	39	0.082	0.062	0.7	1.00	220.0	740	120	100	0.70	30	~
100	Onion.....	2 sm.....	10.3	1.4	0.2	49	0.032	0.044	0.5	1.00	130.0	50	30	20	0.10	9	~
100	Pumpkin.....	½ c. ck.....	7.3	1.2	0.2	36	0.021	0.043	0.8	0.60	480.0	(3400)	(50)	(80)	(0.60)	(8)	~
100	Rutabaga (yellow turnip).....	½ c. ck.....	9.0	1.1	0.1	41	0.055	0.041	0.4	5.00	260.0	330	60	60	0.50	36	~
100	Squash, winter.....	½ c. ck.....	8.8	1.5	0.3	44	0.019	0.028	0.6	0.30	240.0	4950	50	80	0.60	8	~
100	Turnip, white.....	½ c. ck.....	7.1	1.1	0.2	35	0.040	0.034	0.5	37.00	230.0	tr...	60	60	0.50	28	~
100	Turnip, yellow (rutabaga).....	½ c. ck.....	9.0	1.1	0.1	41	0.055	0.041	0.4	5.00	260.0	330	60	60	0.50	36	~
Vegetables—Fresh—15% Edible Portion																	
100	Parsnips.....	½ L.....	18.2	1.5	0.5	83	0.057	0.080	0.7	7.00	740.0	~	110	90	0.20	18	~
100	Peas.....	½-¾ c.....	17.7	6.7	0.4	101	0.022	0.122	1.9	1.00	370.0	680	360	180	2.10	26	~
Vegetables—Fresh—20% Edible Portion																	
100	Corn, Yellow.....	1 m. ear, ½ c.....	20.5	3.7	1.2	108	0.009	0.120	0.5	0.40	370.0	390	150	140	1.40	12	~
100	Potato, white, baked.....	1 sm.....	19.1	2.0	0.1	85	0.011	0.056	0.7	0.80	410.0	20	102	40	1.18	14	~
100	Potato, white, boiled.....	1 sm.....	19.1	2.0	0.1	85	0.011	0.056	0.7	~	~	20	99	38	1.08	11	~
100	Potato, white, French fried.....	10 pc., 2¼" x ½" x 1½".....	19.1	2.0	0.1	157	0.011	0.056	0.7	~	~	(18)	99	36	1.08	12	~
100	Potato, white, mashed.....	½ c. sc., 2 hp. T.....	20.7	3.1	6.6	155	0.048	0.085	0.5	~	~	(283)	105	88	1.11	8	~
100	Potato, white, raw.....	1 sm.....	19.1	2.0	0.1	85	0.011	0.056	0.7	0.80	410.0	20	110	40	1.20	17	~
Vegetables—Fresh—Over 20% Edible Portion																	
100	Beans, Lima.....	½ c.....	23.5	7.5	0.8	131	0.063	0.158	2.3	1.00	680.0	280	250	140	0.90	32	~
45	Potato chips.....	30 L.....	22.0	3.0	16.5	250	0.012	0.047	0.9	153.00	396.0	15	99	36	0.48	6	~
100	Potato, sweet.....	1 sm.....	28.0	1.8	0.7	125	0.030	0.049	0.7	4.00	530.0	5000	100	60	0.70	22	~

†† May not be nutritionally available.

() = Tentative or imputed.

tr = Trace.

~ = No data.

~ = None.

TABLE 22—(Concluded)

Grams	Foods	Household Measure	Grams			Calories	Grams		Milligrams			I.U.	Micrograms		Milligrams		I.U.	
			Carbohy- drate	Pro- tein	Fat		Calcium	Phos- phorus	Iron	Sodium	Potas- sium		Vitamin A	Thia- mine	Ribo- flavin	Niacin		Ascor- bic Acid
Vegetables—Strained or Chopped—Canned																		
30	Beans, green, Gerber's.....	2 T. ch.....	1.2	0.4	0.03	7	0.008	0.007	0.3	0.3	0.3	173	12	22	22	tr..	2	—
30	Beans, green, Heinz.....	2 T. str.....	1.1	0.6	0.06	7	0.015	0.009	0.3	0.3	0.3	340	9	22	22	tr..	2	—
30	Beets, Heinz.....	2 T. str.....	2.4	0.4	0.03	11	0.005	0.010	0.5	0.5	0.5	4	4	8	8	tr..	3	—
30	Carrots, Gerber's.....	2 T. ch.....	1.6	0.2	0.06	8	0.005	0.006	0.1	0.1	0.1	4340	7	9	9	0.18	1	—
30	Carrots, Heinz.....	2 T. str.....	1.6	0.3	0.06	8	0.008	0.008	0.3	0.3	0.3	1928	7	15	15	—	1	—
30	Peas, Heinz.....	2 T. str.....	2.5	1.4	0.14	17	0.003	0.024	0.5	0.5	0.5	312	34	34	34	0.48	4	—
30	Spinach, Gerber's.....	2 T. ch.....	0.7	0.6	0.01	6	††	0.014	0.4	0.4	0.4	1166	8	28	28	0.06	2	—
30	Spinach, Heinz.....	2 T. str.....	0.4	0.7	0.10	6	††	0.011	0.3	0.3	0.3	1531	8	48	48	tr..	2	—
30	Tomato, Heinz.....	2 T. str.....	1.5	0.3	—	7	0.003	0.005	—	—	—	345	23	15	15	0.03	6	—
30	Vegetables, mixed, Heinz.....	2 T. ch.....	2.2	0.2	0.03	10	0.009	0.007	1.5	1.5	1.5	567	8	16	16	—	tr..	—
30	Vegetable soup, Heinz.....	2 T. str.....	2.5	0.5	0.03	12	0.007	0.007	0.3	0.3	0.3	369	62	31	31	—	tr..	—

— = None.

†† Calcium is not available.

tr = Trace.

() = Tentative or imputed.

Sources of figures used in Table 22:

Bowes, Anna de Planter, and Church, Charles F., 1948. Food Values of Portions Commonly Used. Available from Anna de Planter Bowes, 311 S. Juniper Street, Philadelphia 7, Penn.

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FACTORS AFFECTING NUTRITIVE VALUES*

Food values of plants are affected by soil conditions, moisture, sunshine and rate of growth. Animal foods are also affected by the diet eaten. Composition of the same food, produced under different conditions from the same seed, may vary within wide or narrow limits. In recent tests, cow's milk had a more nearly uniform composition than other foods.

After growth, degree of maturity, methods of harvesting, handling, storage, preservation, preparation, cooking and keeping food warm until serving all have further effects.

MINERALS are lost principally through peeling and solubility in water.

Regardless of method and time, certain minerals are more soluble than others in the cooking water. There is also marked variation in loss of the same mineral by the same method of cookery in different vegetables. Leafy varieties tend to lose more minerals than root vegetables. In general, losses in boiled vegetables are

10 to 35 per cent for calcium and phosphorus
25 to 50 per cent of iron in foods

Mineral losses can be prevented by eating fruits and vegetables raw, by cooking in their skins and cooking only the shortest possible time. Always use the cooking water.

VITAMIN A

Gradual destruction of vitamin A and carotene takes place when food is cooked, especially when exposed to air. In cooking leafy vegetables allow 10 to 30 per cent loss. For other green and yellow varieties, 20 per cent is considered an average for all methods of cooking. An average of 7 per cent for potatoes and 5 per cent for all other vegetables has been suggested by the National Research Council.

Quick cooking at high temperatures causes less loss than long, slow cooking with frequent stirring, as in stews.

Pasteurization and quick boiling of milk reduce vitamin A only slightly. Avoid prolonged boiling.

Canning in closed cans retains much more of this vitamin than when open kettle method is used. Vitamin A is gradually lost during storage.

Sharp freezing is not destructive to vitamin A. Losses may occur in the preparation of food for freezing. Losses are gradual during storage with the slowest rate at the lowest temperature.

Rancidity in fats tends to destroy vitamin A. Prevent rancidity.

THE B VITAMINS

All the B vitamins are soluble in water. Up to 50 per cent of the original content of food has been reported dissolved in the cooking water. If this water is utilized, loss through solubility can be prevented.

Cereals may lose from 3 to 34 per cent of thiamine during cooking.

Yeast breads lose 10 to 15 per cent thiamine or B₁ and 10 per cent of riboflavin or B₂ during baking. Toasting causes a further loss of B₁ of 12 to 24 per cent depending on the length of toasting and degree of heat.

Eggs show an average cooking loss of 15 per cent for thiamine and 8 per cent for riboflavin. Poached eggs lose more riboflavin than boiled, fried or scrambled eggs.

Meats retain the highest amounts of B vitamins when fried and broiled. Losses are highest in braising, stewing and roasting. Allow an average of 30 per cent loss of B₁ for broiling, 40 per cent for roasting and 15 per cent for frying. A loss of 15 to 20 per cent for riboflavin is a fair average for most cooking methods. Niacin losses range from 15 per cent for frying to 50 per cent for stewing. Save and use all the meat drippings to retain all possible vitamins.

Vegetables retain the highest amount of B vitamins when steamed or baked and eaten immediately after cooking.

* Bowes, Anna de Planter, and Church, Charles F., 1948. Food Values of Portions Commonly Used. Available from Anna de Planter Bowes, 311 S. Juniper Street, Philadelphia 7, Penn.

Losses are in direct proportion to amount of cooking water and length of cooking time. While there is marked variation among different vegetables, allowances of 25 per cent for thiamine, 10 to 20 per cent for riboflavin and 15 per cent for niacin are fair averages.

In canning, losses vary with the vegetable, the time of processing and length of storage before consumption. After a year's storage, snap beans retained 50 per cent of their thiamine and 90 per cent of their riboflavin. About 30 to 50 per cent of the B vitamins is dissolved in the canning brine. Utilize this liquid.

Sharp freezing losses for B₁ are usually less than 25 per cent and still smaller for B₂.

The B vitamins in general are comparatively stable during drying of food and its subsequent storage. Sun drying of unsulphured fruits may reduce thiamine by 33 to 50 per cent. Destruction is increased to 60 to 100 per cent if fruit is sulphured.

ASCORBIC ACID

Natural variations in different varieties, rate of growth, degree of maturity, position on the vine or tree affect ascorbic acid more than the other vitamins. This vitamin is also seriously affected by oxidation, temperature and storage.

Loss of ascorbic acid begins in all foods as soon as they are removed from the environment in which they were produced. Thin leaves like spinach may lose 50 per cent after standing two or three days. Peppers and tomatoes show slower but gradual losses. Peas lose their ascorbic acid much less quickly if held in the pod than if shelled. Under refrigeration loss is less than at higher temperature.

Berries do not lose an appreciable amount of their ascorbic acid if held for 48 to 72 hours under refrigeration and without bruising. To retain maximum ascorbic acid in strawberries, cap them after washing and slice rather than crush when preparing them for shortcake.

All foods which are chopped or crushed in preparation for cooking or canning lose vitamin C rapidly. The rate of destruction is slower at low temperatures. Orange and tomato juice may be stored in covered containers in a refrigerator for twenty-four hours with little detectable change.

Losses in cooking vary with the method and acidity of the vegetable. For leafy vegetables, 45 per cent is a fair average, for green and yellow vegetables 40 per cent, and for boiling potatoes, 20 per cent. An allowance of 35 per cent loss is a fair average for other vegetables unless they are baked.

Most fruits lose 30 to 40 per cent in cooking unless baked. Losses for baking are often as high as 80 per cent.

Canning losses vary with acidity of the fruit or vegetable. Tomatoes retain their ascorbic acid in canning and in the later storage period better than non-acid vegetables. About 75 per cent is lost in canned string beans whereas 75 per cent may be retained in properly canned fruits and tomatoes.

Sharp freezing causes losses up to 30 or 40 per cent. This occurs largely in the preliminary blanching process involving washing, peeling, sorting and grading. If foods are not blanched losses are even greater and subsequent losses during storage much more rapid.

Dehydration causes almost complete destruction of this vitamin and further loss after a few months of storage. Sulphuring of fruits retards its destruction.

VITAMIN D

This vitamin is relatively the most stable of those discussed. It is not soluble in cooking water, and shows little or no loss upon heating and during storage.

TABLE 23
VARIED MENUS USING APPROXIMATELY THE SAME TOTAL FOOD
FOR THE DAY

Breakfast					
Fruit	Fruit	Fruit	Fruit	Fruit	Fruit
Cereal with milk and sugar			Cereal		Griddle cakes or waffles with butter and syrup or jelly
Bread or toast, butter, jelly	Bread or toast, butter	Bread or toast, butter, jelly	Bread or toast, butter, jelly	Doughnuts	Bacon or sausage
Egg	Egg	Bacon or ham and egg			Beverage
Beverage	Beverage	Beverage	Beverage	Beverage	Beverage
Noon Meal					
Cereal with cheese	Soup with cereal		Milk soup		
Vegetable salad with mayonnaise	Vegetable salad with cheese	Vegetable plate including potato	Fish or chicken salad with vegetables	Egg or meat sandwich	Vegetables au gratin
	Mayonnaise		Mayonnaise	Vegetable salad with mayonnaise	Crisp salad with dressing
Bread and butter	Rolls and butter	Rolls and butter	Rolls and butter	Fruit and cookies	Rolls and butter
Fruit	Fruit ice	Fruit salad	Fruit gelatin	Milk	Fruit and cookies
Milk	Milk	Milk	Beverage		Milk
Evening Meal					
Broth with crackers		Broth with cereal	Tomato juice	Vegetable soup, toasted crax	Consomme
Meat or fish	Meat or poultry	Meat or poultry with stuffing	Baked beans	Meat or poultry with dumplings	Meat or chicken pie with vegetables
Potato	Rice				Vegetable, cooked
Vegetables, 2-cooked	Vegetables, cooked, salad	Vegetables, cooked, celery, olives	Coleslaw or crisp salad	Vegetables, cooked	
Bread and butter	Bread and butter	Bread and butter	Brown bread and butter	Rolls and butter	Bread and butter
Fruit gelatin	Fruit pie	Ice cream	Fruit sherbet	Cereal pudding	Floating island
Cake					
Beverage	Beverage	Beverage	Beverage	Beverage	Beverage

TABLE 24
SUGGESTIONS FOR WAYS OF USING FOODS IN THE DIET*

	Milk	Meat, Fish and Poultry			Eggs	Cheese	Fats
		Fresh, Canned	Salt	Smoked			
Kinds of Food	Dried Evaporated Fresh Skimmed	Beef Pork Lamb Mutton Veal	Pork	Beef Pork		American Cottage, with or without the fat Cream Others	Bacon Butter Oils Peanut butter Cheese (see cheese) Cream (see milk)
	Chicken Duck Turkey						
	Cod Flounder Haddock Halibut Herring Mackerel Salmon Shell fish	Cod Haddock Herring Mackerel Salmon	Haddock Halibut Herring Salmon				
Ways of Using the Foods	As a beverage: Chocolate Eggnog Fruit juices Milk shakes Over cereals In boiled dressing In cereals In cream sauce In custards In puddings In vegetable or fish chowder In vegetable soup With fruits and berries In ice cream In junket In sherbets	As croquettes, with white sauce, crumbs and egg, fried As hash, with chopped vegetables As loaf, with egg, crumbs, cereal and chopped vegetables As meat balls or fish cakes with egg, bread crumbs, and cereal As stuffing for vegetables combined with egg and cereal In chowder, fish with milk and potatoes In pie, with vegetables and biscuit crust In salad, with egg, fruit and vegetables In sandwiches with vegetables In soup with vegetables and cereals In stew, meat with vegetables With cream or white sauce (cheese may be added) With cereals, as macaroni, spaghetti, and rice (vegetables may be added)	As omelet, combined with: Cheese Jelly Vegetables Scrambled, combined with: Cheese Meat Tomatoes Stuffed, combined with foods to flavor With cream sauce (cheese may be added) With bacon With toast In desserts: Cakes or cookies Custard Frozen desserts Pudding In salad, combined with meat, fish, vegetables, chicken In sauces In mayonnaise	With cream sauce on toast, noodles, macaroni, rice With omelets In cheese cake or pie In salads with fruits and vegetables In sandwiches alone or with vegetables In soups as flavoring With crackers and jelly	Butter On bread On cereals On potato On vegetables In puddings In sauces for both vegetables and desserts Peanut Butter On bread In sandwiches In hot breads In cookies Bacon With eggs, meat, and fish With vegetables, hot or in salad Oils Dressings: Mayonnaise with egg French dressing with vinegar or lemon juice		
	Cream In beverages In frozen desserts: Ice cream Mousse In gelatin desserts In soups With desserts: Plain Whipped As sandwich fillings combined with fruits and nuts						

* For recipes consult an authoritative cook book.

TABLE 24—Continued

Kinds of Food	Cereals*		Breads and Flours*
	Barley (pearled)	Ralston	Cornmeal, whole
	Cornflakes	Rice, brown	Cornstarch
	Cornmeal	Rice, polished	Graham
	Farina	Spaghetti	Oatmeal
	Grapenuts	Tapioca	Rye
	Hominy	Wheat, cracked	Wheat, whole
	Macaroni	Wheat, shredded	White
	Noodles	Wheatena	
	Oats, rolled		
	Pettijohn		
Ways of Using the Foods	As breakfast cereals (hot or cold)		<i>Breads</i>
	Fried mush		Sliced, served with butter, jelly, honey, peanut butter
	Fritters		Sandwiches filled with
	Served with:		Cheese or jelly
	Fruits (fresh, dried, canned)		Fruit (fresh, dried)
	Milk, cream, butter		Mayonnaise
	Molasses, honey, syrup		Meat, fish, poultry
	In fritters		Relishes
	In gruels		Vegetables
	In soups		Toast, foods served on
	As a main dish		Cheese and hacon (toasted together)
	Combined with meat, fish, egg or cheese		Cream sauce (cheeso may be added)
	Served with cream sauce (cheese may be added),		Jelly, honey, butter
	tomato sauce		Meat, fish, poultry (with or without gravy)
	As fried mush		Vegetables (creamed or huttered)
	As dessert:		<i>Hot breads</i>
	In cookies		Muffins, with dried fruits, berries, molasses
	In puddings, served with		Pancakes
	Milk, cream, butter		Popovers
	Fruit (fresh, dried, canned)		Scones
	Molasses, honey, syrup		Waffles
	Spices		<i>Crackers</i>
	Sugar, brown and white		Arrowroot cookies
			"Butter" varieties
			"Cheese" varieties
			Graham
			Oatmeal
			Rice wafers
			Ry-Krisp
			Soda crackers
			Sweetened varieties
			Plain or frosted
			Combined with fruit, nuts, chocolate, spices
			Whole wheat wafers
			In puddings
			<i>Flours</i>
			<i>Cake</i>
			Plain or frosted
			With or without fat
			In combination with nuts, fruits, chocolate, spices,
			and flavoring
			<i>Cookies</i>
			Plain or frosted
			In combination, as above
			Doughnuts
			Pie

* With few exceptions breads and cereals are enriched or fortified to the whole grain nutritive value.

TABLE 24—*Concluded*

Vegetables					Fruits		Sweets	
Fresh or Canned or Frozen			Dried					
Green Leafy	Yellow	Others	Legumes	Fresh, Canned, Frozen	Dried			
Beet greens Brussels sprouts Cabbage Chard Dandelion greens Lettuce Spinach	Carrots Corn, yellow Parsnips Potato, sweet Squash Turnip	Asparagus Beans, lima Beans, string Beets Cauliflower Celery Corn, white Cucumbers Eggplant Onion Peas, green Peppers Potatoes, white Radishes Tomatoes	Beans Lentils Peas	Apple Banana Berries Grapefruit Lemon Orange Peach Pear Pineapple Rhubarb Tomato	Apples Apricots Dates Figs Peaches Prunes Raisins	Honey Molasses Sugar, brown Sugar, white Syrup		
Kinds of food	Salads (raw or cooked) Combined with: Cheese, nuts, eggs Fruit Meat, fish, poultry Dressing— French, mayonnaise, boiled or variations Served with: Butter Cream, thin Sauce, white (cheese may be added) Scalloped with: Crumbs and butter In soups with: Meat, fish, poultry (cereals may be added) In chowders and stews with: Fish and milk Meat In sandwiches with: Butter and dressing (cucumbers, lettuce, onion, young spinach, tomato, watercress) As pickles and relishes			Combined with: Meat, vegetables Baked with: Added fats Fat meat Molasses Brown sugar In scalloped dishes In soups (Cheese or meat may be added) In sandwiches (Baked beans)		Candies Desserts: Frozen Mousse Sherbet Gelatin Pies Puddings Shortcake Juice With or without pulp In salads combined with Cheese and nuts In sandwiches combined with: Cheese and nuts In sauces for: Meat, fish, desserts Preserved, as: Jam, jelly, marmalade Whole Raw or cooked With cereals		Molasses In baked beans In gingerbread In ginger cookies On bread On cereal — Sugar In desserts In candy In jelly In preserves On cereals On fruit — Honey and Syrup Used as molasses

TABLE 25
METHOD OF COMPUTING THE FOOD VALUE OF A RECIPE
AND THE COMPUTED FOOD VALUE OF SOME COMMONLY USED RECIPES*

- The recipe should be taken from an authoritative cook book.
- Steps in computing the food value of a recipe:
1. List the foods used in the recipe stating the amounts in both grams and household measures.
 2. From the Table of Food Values and Measures (Table 22) ascertain for each ingredient the units of carbohydrate, protein, fat, calcium, phosphorus, iron and the vitamins. Arrange these figures in tabulated form, similar to example given. The excess acid or alkaline ash of the recipe can be calculated from Tables 52, 53 and 54 and sodium figures from Table 46.
 3. Total the amount of each of the food constituents of the various foods.
 4. To determine the number of calories in the recipe, multiply the grams of carbohydrate and of protein by 4, and the number of grams of fat by 9. Total these figures.
 5. To determine the food value of one serving divide these total figures by the number of servings the recipe makes.
- After computing several recipes or diets one is able to evaluate them in approximate amounts.

Example: Recipe for Gingerbread

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		Calo-ries
	Household Measure	Grams	Car-bohy-drate	Pro-te-in	Fat	Cal-cium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Nia-cin	Ascor-bic Acid	
Molasses	1 cup	284	170.4			0.775	0.145	19.0		227	454	7.95		682
Flour, white, enr....	2½ cups	252	191.3	27.2	2.3	0.047	0.234	7.2		1109	666	8.82		895
Fat (lard).....	4 tablespoons, melted	60			60									540
Soda.....	1 teaspoon													
Ginger.....	1½ teaspoons													
Salt	½ teaspoon													
Boiling water	½ cup													
	8 servings		361.7	27.2	62.3	0.822	0.379	26.2		1336	1120	16.77		2,117
	1 serving		45.2	3.4	7.8	0.103	0.047	3.3		167	140	2.10		265

Method: Mix and sift soda, ginger and salt with flour. Add water to molasses and to this add slowly sifted flour. Add melted shortening and beat well. Bake in shallow, greased pan in a moderate oven for about 25 minutes.

* Recipes are taken from *Good Cooking*, Heseltine and Dow, Houghton Mifflin Company, 1936. The food values were computed from the Table of Food Values and Measures (Table 22).

TABLE 25—Continued

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		Cal-ories	
	Household Measure	Grams	Car-bohy-drate	Pro-te-in	Fat	Cal-cium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Nia-cin	Ascor-bic Acid		
Cakes															
Angel cake															
Egg whites	1 c. (8-9)	270	1.8	29		0.018	0.045	0.3			720	0.27		123	
Sugar	1½ c.	263	263					0.2						1052	
Cream of tartar	1 t.														
Flour, cake	1 c.	105	82.4	8.7	0.8	0.020	0.098	0.8		74	32	0.84		372	
Salt	½ t.														
Vanilla	¾ t.														
Almond extract	¼ t.														
9-inch cake, 3 inches deep 8 servings			347.2	37.7	0.8	0.038	0.143	1.3		74	752	1.11		1547	
1 serving, 3½ inch arc, 4½ x 3 inches			43.4	4.7	0.1	0.005	0.018	0.2		9	94	0.14		193	
Applesauce cake															
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		79	
Butter	½ c.	80			64.0	0.016	0.016		2624			tr.		576	
Applesauce	1 c.	200	39.4	0.4	0.2	0.008	0.012	0.4	(120)	20	20	tr.	2	160	
Raisins, seeded	1 c.	240	171.2	5.6	1.6	0.184	0.312	8.0	120	360	192	1.20	tr.	720	
Sugar	1 c.	210	210.0					0.2						840	
Flour, cake	2 c.	210	164.8	17.4	1.6	0.040	0.196	1.6		148	64	1.68		744	
Soda	1 t.														
Salt	½ t.														
Cinnamon	1 t.														
Cloves	1 t.														
1 sheet—9 inches square 9 servings			585.8	29.8	73.2	0.275	0.641	11.6	3434	588	446	2.93	2	3119	
1 serving—3 inches square			65.1	3.3	8.1	0.030	0.071	1.3	382	65	49	0.33		347	
Plain cake															
Milk	¾ c.	180	9.0	6.0	6.6	0.211	0.167	0.1	238	72	306	0.18	2	119	
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		79	
Butter	4 T.	60			48.0	0.012	0.012		1980		4	0.04		432	
Sugar	1 c.	210	210.0					0.2						840	
Flour, cake	2 c.	210	164.8	17.4	1.6	0.040	0.196	1.6		148	64	1.68		744	
Baking powder	2½ t.														
Salt	½ t.														
Vanilla	1 t.														
1 sheet—9 inches square—12 cup cakes or 9 servings			384.2	29.8	62.0	0.290	0.480	3.3	2838	280	544	1.95	2	2214	
1 serving—3 inches square			42.7	3.3	7.0	0.032	0.053	0.4	315	31	60	0.22		247	
Sponge cake															
Egg	6	300	2.4	38.4	34.8	0.162	0.630	8.4	3420	360	1020	0.30		474	
Lemon juice	1 T.	15	1.2			0.002	0.002			6		0.01	7	5	
Lemon rind	½ gr.														
Sugar	1 c.	210	210.0					0.2						840	
Flour, cake	1 c.	105	82.4	8.7	0.8	0.020	0.098	0.8		74	32	0.84		372	
Salt	1 t.														
9 inch cake—3 inches deep 8 servings			296.0	47.1	35.6	0.184	0.730	9.4	3420	440	1052	1.15	7	1691	
1 serving—3½ inch. arc, 4½ x 3 inches			37.0	5.9	4.5	0.023	0.091	1.2	428	55	132	0.14		211	

TABLE 25—Continued

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		Cal-ories
	Household Measure	Grams	Car-bohy-drates	Pro-tein	Fat	Cal-cium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Nia-cin	Ascor-bic Acid	
White cake														119
Milk	$\frac{1}{2}$ c.	180	9.0	6.0	6.6	0.211	0.167	0.1	288	72	306	0.18	2	28
Egg whites	2	60	0.4	6.4		0.004	0.010	0.1			160	0.06		432
Butter	4 T.	60			48.0	0.012	0.012		1980		4	0.04		840
Sugar	1 c.	210	210.0					0.2						744
Flour, cake	2 c.	210	164.8	17.4	1.6	0.040	0.196	1.6		148	64	1.68		
Baking powder	$\frac{1}{2}$ t.													
Salt	$\frac{1}{2}$ t.													
Vanilla	1 t.													
1 sheet—9 inches square—12 cup cakes or 9 servings			384.2	29.8	56.2	0.267	0.385	2.0	2268	220	534	1.96	2	2163
1 serving—3 inches square			42.7	3.3	6.2	0.029	0.043	0.2	252	24	59	0.22		240
Gingerbread														79
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		720
Shortening	$\frac{1}{2}$ c.	80			80.0									280
Sugar	$\frac{1}{2}$ c.	70	70.0											192
Molasses	$\frac{1}{2}$ c.	80	48.0			0.220	0.040	5.4		64	128	2.24		397
Flour white, enr.	1 c.	112	85.0	12.1	1.0	0.021	0.104	3.2		493	296	3.92		
Cinnamon	$\frac{1}{2}$ t.													
Boiling Water	$\frac{1}{2}$ c.													
Salt	$\frac{1}{2}$ t.													
Soda	$\frac{1}{2}$ t.													
Ginger	1 t.													
1 sheet—6-8 inches square 4 servings			203.4	18.5	86.8	0.268	0.249	10.0	570	617	594	6.21		1668
1 serving—3 inches square			50.9	4.6	21.7	0.067	0.062	2.5	143	154	149	1.55		417
Cookies														
Oatmeal macaroons														79
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		72
Butter	2 t.	10			8.0	0.002	0.002		330					928
Rolled oats	2 c.	240	155.2	40.0	16.0	0.120	1.048	9.6		1632	312	2.64		420
Sugar	$\frac{1}{2}$ c.	105	105.0					0.1						
Salt	$\frac{1}{2}$ t.													
Vanilla	$\frac{1}{2}$ t.													
20 thin cookies	2 $\frac{1}{2}$ " d.		260.6	46.4	29.8	0.149	1.155	11.1	900	1692	482	2.69		1499
1 thin cookie	2 $\frac{1}{2}$ " d.		13.0	2.3	1.5	0.008	0.058	0.6	45	85	24	0.13		75
Other Desserts														
Bread Pudding														
Milk	2 c.	480	24.0	16.8	18.8	0.566	0.446	0.34	768	192	816	0.48	4	334
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.40	570	60	170	0.05		79
Butter	1 T.	15			12.0	0.003	0.003		495		1	0.01		108
Bread crumbs	1 c.	60	31.4	5.1	1.2	0.034	0.060	1.10		144	92	1.32		157
Sugar	$\frac{1}{2}$ c.	53	53.0											212
Salt	$\frac{1}{2}$ t.													
Vanilla	$\frac{1}{2}$ t.													
5 servings			108.8	28.3	37.8	0.630	0.614	2.84	1833	396	1079	1.86	4	890
1 serving	3 hp. T.		21.8	5.7	7.6	0.126	0.123	0.57	367	79	216	0.37		178
Chocolate Mousse														
Milk, cold	$\frac{1}{2}$ c.	60	3.0	2.0	2.2	0.070	0.056	0.04	96	24	102	0.06		40
Milk, scalded	$\frac{1}{2}$ c.	120	6.0	4.0	4.4	0.141	0.111	0.08	192	48	204	0.12	1	80
Cream, heavy	2 c.	480	16.0	9.6	169.6	0.352	0.256	0.40	7936	128	640	0.64		1629
Sugar	$\frac{3}{4}$ c.	140	140.0					0.10						560
Gelatin	$\frac{1}{2}$ T.	4		3.4										14
Chocolate	1 $\frac{1}{2}$ oz.	45	8.1	2.4	23.8	0.143	0.154	1.20		tr.	105	0.45		256
Vanilla	2 t.													

TABLE 25—Concluded

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		Cal-ories	
	Household Measure	Grams	Car-bohy- drate	Pro- tein	Fat	Cal- cium	Phos- pho- rus	Iron	Vita- min A	Thia- mine	Ribo- flavin	Nia- cin	Ascor- bic Acid		
<i>Other Desserts (Con't)</i>															
<i>Chocolate Mousse (Con't)</i>															
10 servings			173.1	21.4	200.0	0.706	0.577	1.82	8224	200	1051	1.27	1	2579	
1 serving	3 hp. T.		17.3	2.1	20.0	0.071	0.058	0.18	822	20	105	0.13		258	
<i>Cornstarch Pudding</i>															
Milk, cold	$\frac{1}{2}$ c.	60	3.0	2.0	2.2	0.070	0.056	0.04	96	24	102	0.06		40	
Milk, scalded	$1\frac{1}{2}$ c.	300	15.0	10.4	11.6	0.353	0.279	0.21	480	120	510	0.30	2	206	
Sugar	$\frac{1}{2}$ c.	53	53.0											212	
Cornstarch	3 T.	30	25.1	tr.	tr.									100	
Salt	$\frac{1}{2}$ t.														
Vanilla	1 t.														
4 servings			96.1	12.4	13.8	0.423	0.335	0.25	576	144	612	0.36	2	558	
1 serving	3 r. T.		24.0	3.1	3.5	0.106	0.084	0.06	144	36	153	0.09		140	
<i>Custard</i>															
Milk, scalded	2 c.	480	24.0	16.8	18.8	0.566	0.446	0.34	768	192	816	0.48	4	334	
Egg	3	150	1.2	19.2	17.4	0.081	0.315	4.20	1710	180	510	0.15		237	
Sugar	$\frac{1}{2}$ c.	53	53.0											212	
Salt	$\frac{1}{2}$ t.														
Vanilla	$\frac{1}{2}$ t.														
4 servings			78.2	36.0	36.2	0.647	0.761	4.54	2478	372	1326	0.63	4	783	
1 serving	3 hp. T.		19.6	9.0	9.0	0.162	0.190	1.14	620	93	332	0.16	1	196	
<i>Lemon Gelatin</i>															
Lemon juice	$\frac{1}{2}$ c.	80	6.4			0.011	0.011	0.1		32	tr.	0.06	38	26	
Sugar	$\frac{1}{2}$ c.	105	105.0					0.1						420	
Gelatin	1 T.	8		6.8										27	
Water, cold	$\frac{1}{2}$ c.														
Water, hot	$1\frac{1}{2}$ c.														
4 servings			111.4	6.8		0.011	0.011	0.2		32	tr.	0.06	38	473	
1 serving	1 s.d.		27.9	1.7		0.003	0.003	0.05		8	tr.	0.02	9	118	
<i>Tapioca Pudding</i>															
Milk, scalded	2 c.	480	24.0	16.8	18.8	0.566	0.466	0.34	768	192	816	0.48	4	334	
Egg	2	100	0.8	12.8	11.6	0.054	0.210	2.80	1140	120	340	0.10		158	
Tapioca, minute	$2\frac{1}{2}$ T.	38	32.5	0.3		0.005	0.005	2.50						130	
Sugar	$\frac{1}{2}$ c.	70	70.0											280	
Salt	$\frac{1}{2}$ t.														
Vanilla	$\frac{1}{2}$ t.														
5 servings			127.3	29.9	30.4	0.625	0.681	5.64	1908	312	1156	0.58	4	902	
1 serving	$\frac{1}{2}$ c.		25.5	6.0	6.1	0.125	0.136	1.13	382	62	231	0.12		180	

TABLE 26
CARBOHYDRATE
VEGETABLES AND FRUITS ARRANGED ACCORDING TO THEIR AVERAGE
PERCENTAGE COMPOSITION OF CARBOHYDRATE
Vegetables

"5 Per cent"	"10 Per cent"	"15 Per cent"	"20 Per cent"	Over "20 Per cent"
Asparagus..... 8 st.	Beans, string.... ½ c.	Parsnips..... ½ c.	Beans, Lima,	Beans, Lima . ½ c.
Asparagus (C)... 7 st.	Beets..... 2 m.	Peas..... ½ c.	dried, ck..... ½ c.	Potato, sweet 1 sm.
Beans, string (C) ½ c.	Brussels sprouts. 10 av.		Beans, navy,	
Beet greens..... ½ c.	Carrots..... 1 L.		dried, ck..... ½ c.	
Broccoli..... ½ c.	Dandelion greens ½ c.		Corn..... ½ c.	
Cabbage..... 1 c.	Onions..... 2 sm.		Peas, dried, ck. ½ c.	
Cabbage,	Peas (C)..... 4 T.		Potato, white... 1 sm.	
Chinese..... 1 c.	Pumpkin..... ½ c.			
Cauliflower..... ½ c.	Rutabaga..... ½ c.			
Celery..... 4 st.	Squash, winter.. ½ c.			
Chard..... ½ c.	Turnip..... ½ c.			
Cucumber..... 1 m.				
Eggplant..... ½ c.				
Endive or chicory 20 lvs.				
Lettuce..... ½ hd.				
Pepper..... 1 m.				
Radishes..... 10				
Sauerkraut..... ½ c.				
Spinach..... ½ c.				
Squash, summer ½ c.				
Tomatoes..... 1 m.				
Tomatoes (C)... ½ c.				

<i>Fruits</i>				
Avocado..... ½ m.	Blackberries..... ½ c.	Apple..... 1 sm.	Peaches (C).... 2 H.	Applesauce
Cantaloupe..... ½ sm.	Cranberries..... 1 c.	Apricots..... 3 m.	Pears (C)..... 2 H.	(C)..... ½ c.
Rhubarb, fresb.. 1 c.	Currants..... ½ c.	Blueberries.... ½ c.	Pineapple (C).. 1 sl.	Apricots (C) 4 sm. H.
Watermelon ½ c.	Gooseberries.... ½ c.	Cherries..... 25 sm.		Banana..... 1 m.
	Grapefruit..... ½ sm.	Grapefruit (C). 8 sec-		Dried:
	Lemon..... 1 L.	tions		Apricots .. 6 H.
	Orange..... 1 sm.	Grapes..... 20		Currants.. 2 T.
	Peach..... 1 m.	Pear..... 1 m.		Dates..... 3-4
	Strawberries.... 10 L.	Pineapple..... 1 sl.		Figs..... 2 sm.
	Tangerine..... 2 sm.	Plums..... 3 av.		Peaches.... 2 H.
		Raspberries.... ½ c.		Prunes.... 3 m.
				Raisins.... 2 T.

TABLE 27

AVAILABLE CARBOHYDRATE IN FRUITS AND VEGETABLES

(Figures taken from *The Chemical Composition of Foods* by R. A. McCance and E. M. Widdowson. Material compiled in Great Britain, Published by Chemical Publishing Co., Inc., Brooklyn, N. Y., 1947)

Grams	Food	Household Measure	Grams
	<i>Fruits</i> (Edible Portion)		
100	Apple, Empire eating.....	1 sm.	12.2
100	Apricots, fresh.....	3 m.	6.7
100	Banana.....	1 m.	19.2
100	Blackberries.....	$\frac{2}{3}$ c.	6.4
100	Cherries, eating.....	25 sm.	11.9
100	Cranberries.....	$\frac{2}{3}$ c.	3.5
100	Grapefruit.....	$\frac{1}{2}$ m.	5.3
100	Grapes, white.....	24 av.	16.1
100	Lemon juice.....	$\frac{1}{2}$ c. sc.	1.6
100	Melon, cantaloupe.....	$\frac{1}{2}$ sm.	5.3
100	Orange.....	1 sm.	8.5
100	Orange juice.....	$\frac{1}{2}$ c. sc.	9.4
100	Peach.....	1 m.	9.1
100	Pear, Empire eating.....	$\frac{1}{2}$ L.	10.8
100	Pineapple.....	1 sl., $\frac{3}{4}$ " thick	11.6
100	Plums.....	3-4 m.	9.6
100	Raspberries.....	4 r. T.	5.6
100	Strawberries.....	10 L.	6.2
	<i>Vegetables</i>		
100	Asparagus.....	8 st., 4" long, ck.	1.1
100	Beans, butter or Lima.....	$\frac{1}{2}$ c. or 4 r. T., ck.	17.1
100	Beans, French or string.....	$\frac{1}{2}$ c. or 4 r. T., ck.	1.1
100	Beans, Haricot or navy.....	$\frac{1}{2}$ c. or 3 r. T., ck.	16.6
100	Beets.....	2 sm., ck.	9.9
100	Broccoli tops.....	$\frac{1}{2}$ c. ck.	0.4
100	Brussels sprouts.....	9 m., ck.	1.7
100	Cabbage, winter.....	5 r. T., ck.	1.3
100	Carrot.....	1 L., raw	5.4
100	Cauliflower.....	6 r. T., ck.	1.2
100	Celery.....	4 st., raw	1.3
100	Celery.....	6 r. T., ck.	0.7
100	Cucumber.....	$\frac{1}{2}$ m. or 10 sl.	1.8
100	Endive.....	2 m. st.	1.0
100	Lettuce.....	$\frac{1}{4}$ head or 10 lvs.	1.8
100	Onions.....	2 m., ck.	2.7
100	Parsnip.....	1 L., raw	11.3
100	Peas.....	4 T., raw	10.6
100	Potato.....	1 sm., old, ck.	19.7
100	Pumpkin.....	$\frac{1}{2}$ c., cu., raw	3.4
100	Radishes.....	15-20 m., raw	2.8
100	Spinach.....	4 r. T., ck.	1.4
100	Tomato.....	1 m., raw	2.8
100	Turnip.....	2 r. T., cu., raw	3.8

TABLE 28
CARBOHYDRATE EXCHANGES

Approximately 10 grams. Various fruits equivalent in carbohydrate to 1 small orange

Food	Household Measure	Grams			
		Amount	Carbo- hydrate	Protein	Fat
Apple.....	$\frac{1}{2}$ L., $3\frac{1}{4}$ " d.	75	11.2	0.3	0.3
Apricots (C).....	3 H., $\frac{1}{2}$ T. J.	50	10.7	0.3	—
Apricots, dried.....	2-3 H.	15	10.0	0.8	—
Apricots, fresh.....	2 m.	75	9.7	0.7	—
Banana.....	$\frac{1}{2}$ m.	50	11.5	0.6	0.1
Blackberries.....	$\frac{2}{3}$ -1 c.	100	11.9	1.2	1.1
Blueberries.....	$\frac{1}{2}$ c. sc.	67	10.0	0.4	0.4
Cantaloupe.....	$\frac{2}{3}$, $4\frac{1}{2}$ " d.	200	9.2	1.2	0.4
Cherries, sweet.....	17 sm.	67	11.9	0.7	0.3
Cranberries.....	1 c.	100	11.3	0.4	0.7
Currants.....	$\frac{3}{4}$ c.	100	12.7	1.6	0.4
Currants, dried.....	1 T.	15	10.7	0.4	0.1
Dates.....	2	15	11.3	0.4	0.1
Figs, dried.....	1 sm.	15	10.1	0.6	0.2
Gooseberries.....	$\frac{2}{3}$ -1 c.	100	10.0	0.8	0.4
Grapefruit.....	$\frac{1}{2}$ sm.	100	10.1	0.5	0.2
Grapefruit (C).....	$\frac{1}{3}$ c. sc.	66	12.6	0.4	0.1
Grapes.....	15	67	10.0	0.9	0.9
Lemon.....	$1\frac{1}{4}$ L.	125	10.9	1.3	0.8
Orange.....	1 sm.	100	11.2	1.0	0.2
Orange juice.....	$\frac{1}{2}$ c. sc.	100	10.1	—	—
Peach.....	1 m.	100	12.0	0.5	0.1
Peach (C).....	1 H., $\frac{1}{2}$ T. J.	50	9.1	0.2	—
Peach, dried.....	1 H.	15	10.4	0.5	0.1
Pear.....	$\frac{2}{3}$ m.	67	10.6	0.5	0.3
Pear (C).....	1 H., $\frac{1}{2}$ T. J.	50	9.2	0.1	—
Pineapple.....	$\frac{3}{4}$ sl., $\frac{3}{4}$ " ϕ	75	10.3	0.3	0.2
Pineapple (C).....	$\frac{1}{2}$ sl., $\frac{1}{2}$ T. J.	50	10.5	0.2	—
Plums.....	2 L.	80	10.4	0.6	0.2
Prunes.....	1 L. or 2 sm.	15	10.7	0.4	0.1
Raisins.....	1 T.	15	10.7	0.4	0.1
Raspberries, red.....	$\frac{1}{2}$ c.	70	10.0	0.8	0.4
Rhubarb.....	$2\frac{1}{2}$ c.	250	9.5	1.2	0.3
Strawberries.....	13 L.	130	10.4	1.0	0.8
Tangerines.....	2 sm.	100	11.0	0.8	0.3
Watermelon.....	1 thin sl.	150	10.5	0.8	0.3

Other food constituents as well as carbohydrate should be considered in using these exchanges.

TABLE 29
CARBOHYDRATE EXCHANGES

Approximately 5 grams. Various vegetables equivalent in carbohydrate to 1 medium tomato

Food	Household Measure	Grams			
		Amount	Carbo- hydrate	Protein	Fat
Asparagus.....	8 st. long	100	4.0	2.0	0.2
Beans, string (C).....	$\frac{3}{4}$ c.	150	5.7	1.5	—
Beet greens.....	$\frac{1}{2}$ c. ck.	100	5.6	2.0	0.3
Broccoli.....	$\frac{1}{2}$ c. ck.	100	5.5	3.3	0.2
Cabbage.....	$\frac{3}{4}$ -1 c. ck.	100	5.3	1.4	0.2
Cabbage.....	1-1 $\frac{1}{2}$ c. raw	100	5.3	1.4	0.2
Cauliflower.....	$\frac{3}{4}$ c. ck.	100	5.0	2.4	0.2
Celery.....	4 st.	100	4.0	1.4	0.2
Cucumber.....	1 $\frac{1}{2}$ m.	150	4.5	1.5	0.2
Egg plant.....	$\frac{1}{2}$ c. ck.	100	5.5	1.1	0.2
Escarole.....	4 lvs.	100	4.0	2.0	0.2
Lettuce.....	15 lvs. or $\frac{3}{8}$ hd.	150	4.5	1.5	0.3
Pepper, green.....	1 m.	100	5.7	1.2	0.2
Radishes.....	10	100	4.0	1.0	0.1
Sauerkraut.....	$\frac{3}{4}$ c.	150	5.1	1.7	0.3
Spinach.....	$\frac{3}{4}$ c. ck.	150	4.8	3.5	0.5
Squash, summer.....	$\frac{1}{2}$ c. ck.	100	4.0	0.6	0.1
Tomato, fresh.....	1 m.	100	4.0	1.0	0.3
Tomato juice.....	$\frac{1}{2}$ c. sc.	100	4.3	1.0	0.2
Tomato, stewed.....	$\frac{3}{4}$ c.	150	5.9	1.5	0.3

Approximately 10 grams. Various vegetables equivalent in carbohydrate to 1 large carrot

Beans, string, fresh.....	$\frac{3}{4}$ c.	150	11.6	3.6	0.3
Beets.....	2 m.	100	9.6	1.6	0.1
Brussels sprouts.....	10-11 av.	100	9.0	4.4	0.5
Carrots.....	1 L.	100	9.3	1.2	0.3
Dandelion greens.....	$\frac{1}{2}$ c. ck.	100	8.8	2.7	0.7
Okra.....	13 pods	130	9.6	2.3	0.3
Onions.....	2 sm.	100	10.3	1.4	0.2
Parsnips.....	$\frac{1}{4}$ L.	50	9.1	0.8	0.3
Peas (C).....	$\frac{3}{8}$ c.	75	9.7	2.6	0.3
Peas, fresh.....	$\frac{1}{4}$ c.	50	8.8	3.4	0.2
Pumpkin.....	$\frac{2}{3}$ c.	133	9.7	1.6	0.3
Squash, Hubbard.....	$\frac{1}{2}$ c.	100	8.8	1.5	0.3
Turnip.....	$\frac{1}{2}$ c.	100	9.0	1.1	0.1

Other food constituents as well as carbohydrate should be considered in using these exchanges.

TABLE 30
CARBOHYDRATE EXCHANGES

Approximately 15 grams. Various foods equivalent in carbohydrate to 1 slice of bread or 1 very small potato

Food	Household Measure	Grams			
		Amount	Carbo- hydrate	Protein	Fat
Biscuit.....	1 b., 2" d.	—	15.0	2.5	2.6
Bread.....	1 sl.	30	16.0	2.5	0.6
Cake, angel.....	1½" arc, 4½"x3"	—	15.5	1.7	—
Cake, plain.....	1"x3"x2"	—	14.2	1.1	2.3
Cake, sponge.....	1½" arc, 4½"x3"	—	15.8	2.6	1.9
Cake, white.....	1"x3"x2"	—	14.2	1.1	2.1
Cookies, assorted.....	2 av.	—	15.0	1.2	2.6
Cookies, oatmeal macaroon.....	1 thin 2¼" d.	—	13.0	2.3	1.5
Cornstarch.....	1½ T.	15	13.0	—	—
Corn syrup.....	1 T.	20	14.8	—	—
Crackers, graham.....	2	20	14.8	1.6	2.0
Crackers, saltines.....	5	20	15.0	2.0	2.5
Crackers, Unecda.....	3½	21	15.8	2.1	2.1
Flour, white.....	3 T.	24	18.0	2.7	0.3
Gingerbread.....	1"x3"x2"	—	17.0	1.5	7.2
Ice, orange.....	4 T.	—	15.7	—	—
Jam or jelly.....	1 T.	20	14.2	0.1	0.1
Lemon gelatin.....	½ s.	50	14.0	0.9	—
Macaroni, ck.....	½ c. (4 r. T.)	100	14.6	2.6	0.3
Muffin, cornmeal.....	¾ muffin, 2¼" d.	—	14.7	2.9	2.4
Muffin, plain.....	¾ muffin, 2¼" d.	—	13.0	2.5	2.4
Molasses.....	1½ T. sc.	25	15.0	—	—
Oats, rolled, ck.....	1 s.d. sc.	120	14.5	3.7	1.4
Pudding, bread.....	2 hp. T.	—	14.5	3.7	5.0
Pudding, cornstarch.....	2 r. T.	—	16.0	2.0	2.3
Pudding, tapioca.....	1 s.d. sc.	—	17.0	4.3	4.0
Ry-Krisp.....	3 crackers	21	15.0	2.4	—
Shredded whcat.....	¾ b.	20	15.7	2.0	0.3
Sugar.....	3 t. or 3 lumps	15	15.0	—	—
Tapioca.....	1 T.	15	13.0	0.1	—
Vegetables:					
Beans, baked (C).....	2 r. T.	67	12.7	3.8	0.1
Corn (C).....	½ c. sc.	100	16.1	2.0	0.5
Corn, fresh.....	1 sm. ear	75	15.4	2.8	0.9
Potato.....	1 very sm.	75	14.3	1.5	—

Other food constituents as well as carbohydrate should be considered in using these exchanges.

TABLE 31
PROTEIN EXCHANGES

Approximately 7 grams. Various foods equivalent in protein to 1 egg

Food	Household Measure	Grams			
		Amount	Carbo- hydrate	Protein	Fat
°Almonds.....	32-40 nuts	40	7.7	7.5	21.6
Bacon, ck., crisp.....	5 sl., 5" long	50	0.8	7.0	13.3
°Beans, baked (C).....	4 r. T.	134	25.3	7.6	2.6
°Beans, Lima, dry.....	2 T. ($\frac{1}{2}$ c. ck.)	30	18.5	6.2	0.4
°Beans, Lima, fresh.....	$\frac{1}{2}$ c.	100	23.5	7.5	0.8
°Beans, navy, dry.....	2 T. ($\frac{1}{2}$ c. ck.)	30	18.0	7.0	0.5
Beans, soy, dry.....	1 $\frac{1}{2}$ T.	23	2.7	7.9	4.1
°Bread.....	3 sl.	90	48.0	7.5	1.8
°Cereal, oats, ck.....	1 c.	240	28.8	7.4	2.9
Cheese, American.....	1 oz. (2 T.)	30	0.5	7.0	9.7
Cheese, cottage.....	1 oz. (2 T.)	30	1.3	5.8	0.2
Cheese, cream.....	3 oz. (6 T.)	90	1.5	6.3	33.0
°Crackers, Uneeda.....	12	72	54.0	7.2	7.2
°Crackers, graham.....	9	90	66.6	7.2	9.0
Cream, light.....	1 c.	240	9.6	6.4	48.0
Egg.....	1	50	0.4	6.4	5.8
Fish, av.....	1 $\frac{1}{2}$ oz.	45	—	7.8	0.5
°Gelatin.....	1 T.	10	—	6.8	—
Liver, beef.....	1 oz.	30	1.8	6.0	1.0
Liver, calves.....	1 oz.	30	1.2	5.7	1.5
Meat, lean.....	1 oz.	30	—	5.6	4.2
Meat, med. fat.....	1 $\frac{1}{3}$ oz.	40	—	7.3	7.2
Poultry, dark.....	1 oz.	30	—	6.3	1.4
Poultry, light.....	1 oz.	30	—	7.0	1.0
Milk.....	1 c.	240	12.0	8.4	9.4
°Peanut butter.....	1 $\frac{1}{2}$ T.	23	3.8	6.8	10.5
°Peanuts, shelled.....	33-35 nuts	30	7.0	8.0	13.2
°Peas, dried.....	2 T. ($\frac{1}{2}$ c. ck.)	30	18.5	7.4	0.3
°Potatoes.....	2 L. or 3 sm.	300	57.3	6.0	0.3
°Vegetables—5 per cent.....	5 s.	500	20.0	7.5	—
°Vegetables—10 per cent.....	3 s.	300	25.5	6.0	—

Other food constituents as well as protein should be considered in using these exchanges.

° Incomplete protein.

TABLE 32
FAT EXCHANGES

Approximately 4 grams. Various foods equivalent in fat to 1 teaspoon of butter

Food	Household Measure	Grams			
		Amount	Carbohy- drate	Protein	Fat
Bacon, ck. crisp.....	2 sl. 5" long	20	0.3	2.8	5.4
Butter.....	1 t.	5	—	—	4.0
Cheese, American.....	$\frac{1}{2}$ oz. or 1 T.	15	0.3	3.5	4.9
Cheese, cream.....	$\frac{1}{2}$ oz. or 1 T.	15	0.3	1.0	5.5
Cream, heavy.....	1 T.	15	0.5	0.3	5.3
Cream, light.....	$1\frac{1}{2}$ T.	22	0.8	0.6	4.5
Egg.....	1	50	0.4	6.4	5.8
French dressing.....	2 t.	10	1.4	—	4.5
Ice cream, commercial.....	2 r. T.	38	7.8	1.5	4.6
Liver, beef.....	4 oz.	120	7.2	24.0	4.0
Mayonnaise.....	1 t.	5	0.2	—	3.7
Meat, lean, av.....	1 oz.	30	—	5.6	4.2
Meat, med. fat, av.....	1 oz.	30	—	5.5	5.4
Poultry, dark.....	3 oz.	90	—	18.9	4.2
Poultry, light.....	4 oz.	120	—	28	4.0
Milk, whole.....	$\frac{1}{2}$ c.	120	6.0	4.0	4.4
Oil.....	1 t.	5	—	—	5.0
Olives, green.....	3 m.	30	1.2	0.6	4.2
Olives, ripe.....	4 sm.	20	0.6	—	4.0
Peanut butter.....	2 t.	10	1.7	3.0	4.7
Peanuts, shelled.....	11-12 nuts	10	2.3	2.7	4.4
Walnuts, shelled.....	4-8 H.	8	1.2	1.2	4.9

Other food constituents as well as fat should be considered in using these exchanges.

TABLE 33
FAT
AVERAGE SERVINGS* OF SOME COMMON FOODS ARRANGED ACCORDING TO
THEIR CONTENT OF FAT

Grams	Food	Fat	Grams	Food	Fat
More than 4 Grams			3.9-2 Grams		
<i>Dairy Products</i>			<i>Bread, Cereals, Crackers</i>		
5	Butter.....	4.0	35	Biscuit, baking powder.....	2.6
30	Cheese, American.....	9.7	44	Bread, Boston brown.....	2.0
30	Cheese, cream.....	11.0	40	Muffins, plain.....	3.2
30	Cream, heavy.....	10.6	30	Oats, rolled, dry.....	2.0
30	Cream, light.....	6.0	35	Roll, white, hard.....	2.1
18	Egg yolk.....	5.1	<i>Dairy Products</i>		
240	Milk.....	9.4	30	Milk, condensed.....	2.6
<i>Fats</i>			30	Milk, evaporated.....	2.5
5	All oils and fats.....	5.0	<i>Meat, Fish, Poultry</i>		
<i>Fruits</i>			90	Bluefish.....	3.6
100	Avocado.....	26.4	30	Salmon, smoked.....	2.8
<i>Meat, Fish, Poultry</i>			30	Sardine.....	3.3
30	Bacon, ck., crisp.....	8.1	<i>Miscellaneous</i>		
30	Bologna.....	4.8	—	Cake, fruit.....	3.2
60	Frankfort.....	8.5	15	Cookies, av.....	3.5
90	Halibut.....	4.8	30	Fudge.....	2.4
120	Liver.....	4.0	10	Olive, ripe.....	2.0
90	Mackerel.....	6.9	158	Soups, canned, av.....	3.5
90	Meat, lean.....	12.6	<i>Vegetables</i>		
90	Meat, med. fat.....	16.2	100	Beans, baked (C).....	2.0
90	Poultry.....	4.2	1.9-1 Gram		
90	Salmon, fresh.....	12.0	<i>Bread, Cercals, Crackers</i>		
90	Salmon, canned.....	5.7	30	Bread, cracked wheat.....	1.3
90	Shad.....	8.8	30	Bread, rye, light.....	1.0
60	Tuna.....	7.1	30	Bread, whole wheat.....	1.0
90	White fish.....	6.0	3	Crackers, Crax.....	1.0
<i>Miscellaneous</i>			10	Crackers, Graham.....	1.0
—	Cake, plain.....	7.0	30	Noodles.....	1.5
43	Candy, chocolate.....	15.0	35	Rolls, cloverleaf.....	1.4
50	Doughnut.....	10.5	35	Rolls, whole wheat.....	1.5
—	Gingerbread.....	21.7	<i>Fruits</i>		
100	Ice cream.....	12.3	100	Blackberries.....	1.1
30	Nuts, all kinds, av.....	18.0	100	Grapes, American.....	1.4
—	Pie, av.....	14.0	100	Pomegranate.....	1.2
—	Pudding, av.....	6.0	<i>Meat, Fish, Poultry</i>		
<i>Vegetables</i>			12	Anchovy.....	1.2
45	Potato chips.....	16.5	30	Beef, dried.....	1.9
30	Soy bean, dry.....	5.4	100	Clams.....	1.5
			60	Crab (C).....	1.7
			90	Crab, fresh	1.4
			60	Lobster.....	1.1
			90	Oysters.....	1.2
			90	Smelts.....	1.6
			<i>Miscellaneous</i>		
			10	Olive, green.....	1.4
			<i>Vegetables</i>		
			100	Corn.....	1.2

* Cf. Table of Food Values and Measures (Table 22) for amounts of average servings.

TABLE 33—*Concluded*

Grams	Food	Fat	Grams	Food	Fat
Less than 1 Gram			"Fat Free"		
<i>Bread, Cereals, Crackers</i>			<i>Dairy Products</i>		
30	Bread, white.....	0.6	50	Egg, white.....	—
30	Cereals, dry, av.....	0.5	<i>Fish</i>		
4	Crackers, saltines.....	0.5	90	Cod, fresh.....	—
6	Crackers, Unedas.....	0.5	90	Scallops.....	—
30	Spaghetti.....	0.4	<i>Miscellaneous</i>		
5	Toast, Melba.....	0.2	158	Bouillon.....	—
<i>Dairy Products</i>			—	Coffee.....	—
240	Buttermilk.....	0.2	158	Consomme.....	—
30	Cheese, cottage.....	0.2	10	Gelatin.....	—
240	Milk, skimmed.....	0.2	240	Gingerale.....	—
<i>Fruits</i>			100	Grape juice.....	—
100	All fruits, av.....	0.2	30	Honey.....	—
<i>Meat, Fish, Poultry</i>			130	Jee, orange.....	—
90	Bass, white.....	0.5	20	Jam.....	—
90	Flounder.....	0.5	100	Jello.....	—
90	Haddock.....	0.3	20	Jelly.....	—
60	Lobster (C).....	0.8	28	Marshmallow.....	—
60	Shrimp (C).....	0.5	20	Molasses.....	—
<i>Miscellaneous</i>			15	Sugar.....	—
—	Cake, angel.....	0.1	20	Syrup, corn.....	—
3	Cocoa, dry.....	0.5	30	Syrup, maple.....	—
5	Mustard, prepared.....	0.2	15	Tapioca.....	—
100	Pickle, dill.....	0.2	—	Tea.....	—
30	Pickle, sweet.....	0.1			
<i>Vegetables</i>					
100	All vegetables, av.....	0.2			

TABLE 34

CALCIUM*

AVERAGE SERVINGS** OF FRUITS AND VEGETABLES ARRANGED ACCORDING TO
THEIR CONTENT OF CALCIUM

Grams	Food	Calcium	Grams	Food	Calcium
More than 0.050 Gram			0.030 to 0.021 Gram—Continued		
<i>Fruits</i>			<i>Vegetables</i>		
30	Figs, dried.....	0.067	100	Asparagus, fresh.....	0.022
<i>Vegetables</i>			100	Beans, Lima (C).....	0.027
100	Beans, Lima, fresh.....	0.063	100	Beans, snap.....	0.027
100	Beans, snap, fresh.....	0.065	100	Beans, sprouts, mung.....	0.023
30	Beans, soy, dried.....	0.068	100	Beets, fresh, raw.....	0.027
100	Beans, soy, fresh.....	0.099	100	Cauliflower.....	0.022
100	Beans, soy, sprouts, fresh...	0.065	50	Celery, raw, bleached.....	0.025
100	Broccoli, fresh.....	0.130	30	Lentils, dried.....	0.029
100	Dandelion greens.....	0.187	30	Peas, dried.....	0.022
100	Endive or chicory.....	0.074	100	Peas, fresh, raw.....	0.022
100	Escarole.....	0.074	100	Pickles, cucumber.....	0.024
100	Kale, fresh, raw.....	0.225	100	Potato, sweet.....	0.030
100	Lettuce, green.....	0.060	0.020 to 0.004 Gram		
100	Mustard greens.....	0.220	<i>Fruits</i>		
100	Parsnips, fresh, raw.....	0.057	100	Apple, fresh.....	0.006
100	Rutabaga.....	0.055	100	Applesauce.....	0.004
100	Turnip greens.....	0.310	100	Apricots (C).....	0.010
0.050 to 0.041 Gram			100	Apricots, fresh.....	0.016
<i>Fruits</i>			100	Avocado.....	0.010
100	Figs, fresh.....	0.050	100	Banana, fresh.....	0.008
<i>Vegetables</i>			100	Blueberries, fresh.....	0.016
30	Beans, navy, peabean and kidney.....	0.044	100	Cantaloupe.....	0.017
100	Cabbage, fresh, head.....	0.046	100	Cherries, fresh, sweet.....	0.017
50	Okra.....	0.041	100	Fruit cocktail (C).....	0.009
100	Sauerkraut (C).....	0.046***	100	Grapefruit.....	0.017
100	Yams.....	0.044	100	Grapes, American.....	0.017
0.040 to 0.031 Gram			100	Grapes, green, seedless.....	0.013
<i>Fruits</i>			100	Grapes, Tokay.....	0.010
100	Blackberries.....	0.032	100	Honeydew melon.....	0.017
100	Currants, fresh.....	0.035	100	Lemon.....	0.014
100	Figs (C) in syrup.....	0.035	100	Lime.....	0.014
100	Orange and orange juice.....	0.033	100	Peaches (C).....	0.005
100	Raspberries.....	0.040	100	Peach, fresh.....	0.008
100	Tangerines.....	0.033	100	Pears (C).....	0.008
<i>Vegetables</i>			100	Pear, fresh.....	0.013
100	Artichoke.....	0.034	100	Pineapple (C).....	0.010
100	Brussels sprouts.....	0.034	100	Pineapple, fresh.....	0.016
100	Carrots.....	0.039	100	Plums (C).....	0.008
50	Celery, green stalks.....	0.036	100	Plums, fresh.....	0.017
100	Onions.....	0.032	100	Pomegranate, fresh.....	0.012
100	Turnip, white.....	0.034	100	Watermelon.....	0.007
0.030 to 0.021 Gram			<i>Vegetables</i>		
<i>Fruits</i>			100	Asparagus (C).....	0.020
30	Apricots, dried.....	0.026	100	Beans, Lima, dried.....	0.020
30	Currants, dried.....	0.023	100	Beets (C).....	0.015
30	Dates, dried.....	0.022	100	Corn, sweet (C).....	0.004
100	Gooseberries, fresh.....	0.022	100	Corn, sweet, fresh.....	0.009
100	Loganberries, fresh.....	0.027	100	Cucumber.....	0.010
100	Persimmon.....	0.022	100	Lettuce, head.....	0.020
30	Raisins.....	0.023	100	Mushrooms, fresh.....	0.014
100	Strawberries, fresh.....	0.028	100	Peppers, green.....	0.011
			100	Potato, white, raw.....	0.011
			100	Pumpkin (C).....	0.020
			100	Radishes.....	0.004
			100	Squash, summer.....	0.015
			100	Squash, winter.....	0.019
			100	Tomato.....	0.011

* See p. 125, "Factors Affecting Nutritive Values."

** Cf. Table of Food Values and Measures (Table 22) for amounts of average servings.

*** May not be nutritionally available.

TABLE 35
CALCIUM EXCHANGESApproximately 0.035 gram. Various foods equivalent in calcium to 2 tablespoons of milk or $\frac{1}{8}$ cup

Grams	Food	Household Measure	Grams	Food	Household Measure
<i>Bread and Cereals</i>			<i>Meat</i>		
60	Bread, wh. wheat.....	2 sl.	360	Liver, beef.....	12 oz.
150	Bread, rye, light.....	5 sl.	330	Meat, lean.....	11 oz.
60	Bread, white, enr.....	2 sl.	330	Meat, med. fat.....	11 oz.
60	Oats, rolled, dry.....	$\frac{1}{2}$ c. ($1\frac{1}{3}$ c. ek)	150	Poultry, dark.....	5 oz.
90	Shredded wheat.....	3 b.	150	Poultry, light.....	5 oz.
<i>Dairy Products</i>			<i>Miscellaneous</i>		
4	Cheese, American.....	$\frac{3}{4}$ t.	15	Almonds.....	12-15 nuts
45	Cheese, cottage.....	3 T.	30	Maple syrup.....	1 r. T.
10	Cheese, cream.....	2 t.	13	Molasses.....	2 t.
45	Cream, heavy.....	3 T.	45	Peanuts.....	49-53 nuts
38	Cream, light.....	$2\frac{1}{2}$ T.	45	Walnuts.....	24-48 nuts
75	Egg.....	$1\frac{1}{2}$	<i>Vegetables</i>		
15	Milk, evaporated.....	1 T.	150	Asparagus.....	18 st., 4" long
30	Milk, skim.....	2 T.	45	Beans, Lima, dried....	3 T.
30	Milk, whole.....	2 T.	50	Beans, string.....	$\frac{1}{4}$ c.
<i>Fish</i>			75	Cabbage, head.....	$\frac{1}{2}$ - $\frac{3}{4}$ c.
180	Haddock.....	6 oz.	100	Carrot.....	1 L.
90	Herring, smoked.....	3 oz.	150	Cauliflower.....	1 c.
180	Mackerel.....	6 oz.	50	Celery.....	2 st.
60	Oysters.....	4 m.	38	Chard*.....	3 T.
60	Salmon (C).....	$\frac{1}{2}$ oz.	19	Dandelion greens.....	$1\frac{1}{2}$ T.
270	Salmon, fresh.....	9 oz.	50	Endive.....	10 lvs.
180	Shad.....	6 oz.	50	Lettuce, green leaf....	5 lvs.
<i>Fruits</i>			100	Onions.....	2 m.
45	Apriots, dried.....	9 H.	67	Parsnips.....	$\frac{1}{3}$ c.
200	Blueberries.....	$1\frac{1}{3}$ c.	100	Potato, sweet.....	1 sm.
45	Currants, dried.....	3 T.	300	Potato, white.....	3 sm.
45	Dates.....	5-6	67	Rutabaga.....	$\frac{1}{3}$ c.
15	Figs.....	1 sm.	100	Turnip, white.....	$\frac{1}{2}$ c.
150	Gooseberries.....	$1-1\frac{1}{2}$ c.	25	Watercress.....	$\frac{1}{4}$ bu.
200	Grapes.....	40 av.			
200	Grapefruit.....	1 sm.			
250	Lemon.....	$2\frac{1}{2}$ L.			
100	Orange.....	1 sm.			
100	Orange juice.....	$\frac{1}{2}$ c. se.			
400	Peaches.....	4 m.			
300	Pears.....	3 m.			
200	Plums.....	6 m.			
60	Prunes.....	6 m.			
100	Raspberries.....	1 c.			
125	Strawberries.....	13 L.			

* May not be nutritionally available.

TABLE 36
CALCIUM
VARIOUS COMBINATIONS OF FOODS SUPPLYING A DAY'S REQUIREMENT

Daily Requirement: Adult—1.0 gram. Children (under 12)—1.2 grams

Adult				Child			
Grams	Food	Household Measure	Calcium Grams	Grams	Food	Household Measure	Calcium Grams
960	Milk.....	4 cups	1.132	960	Milk.....	4 cups	1.132
				90	Bread, whole wheat.....	3 sl.	0.054
				50	Egg.....	1	0.027
Total Calcium.....			1.132	Total Calcium.....			1.213
Total Phosphorus.....			0.892	Total Phosphorus.....			1.357
Total Iron.....			0.0007	Total Iron.....			0.0045
720	Milk.....	3 cups	0.849	720	Milk.....	3 cups	0.849
100	Beans, string.....	1 s. d.	0.065	100	Beans, string.....	1 s. d.	0.065
120	Bread, white, enr.....	4 sl.	0.068	90	Bread, whole wheat.....	3 sl.	0.054
100	Carrots.....	1 s. d.	0.039	180	Cream of wheat, enr.....	1 s. d.	0.151
100	Orange.....	1 sm.	0.033	50	Egg.....	1	0.027
200	Potato.....	1 L.	0.022	100	Orange.....	1 sm.	0.033
Total Calcium.....			1.076	200	Potato.....	1 L.	0.022
Total Phosphorus.....			1.005	Total Calcium.....			1.201
Total Iron.....			0.0054	Total Phosphorus.....			1.482
480	Milk.....	2 cups	0.566	Total Iron.....			0.0199
200	Apple.....	1 L.	0.012	480	Milk.....	2 cups	0.566
100	Broccoli.....	1 s. d.	0.130	100	Beans, string.....	1 s. d.	0.065
240	Bread, white, enr.....	6 sl.	0.102	120	Bread, whole wheat.....	4 sl.	0.072
100	Carrots.....	1 s. d.	0.039	100	Broccoli.....	1 s. d.	0.130
100	Eggs.....	2	0.054	180	Cream of wheat, enr.....	1 s. d.	0.151
40	Molasses.....	2 T.	0.110	100	Eggs.....	2	0.054
180	Oats, rolled, ck.....	1 s. d.	0.015	40	Molasses.....	2 T.	0.110
100	Orange.....	1 sm.	0.033	100	Orange.....	1 sm.	0.033
200	Potato.....	1 L.	0.022	100	Potato.....	1 sm.	0.011
100	Tomato.....	1 m.	0.011	100	Tomato.....	1 m.	0.011
Total Calcium.....			1.094	Total Calcium.....			1.203
Total Phosphorus.....			1.282	Total Phosphorus.....			1.551
Total Iron.....			0.0157	Total Iron.....			0.257
240	Milk.....	1 cup	0.283	240	Milk.....	1 cup*	0.283
100	Banana.....	1 m.	0.008	100	Beans, string.....	1 s. d.	0.065
150	Bread, whole wheat.....	5 sl.	0.090	180	Bread, whole wheat.....	6 sl.	0.108
100	Broccoli.....	1 s. d.	0.130	100	Broccoli.....	1 s. d.	0.130
180	Cream of Wheat, enr.....	1 s. d.	0.151	100	Carrots.....	1 s. d.	0.039
100	Eggs.....	2	0.054	180	Cream of wheat, enr.....	1 s. d.	0.151
100	Lettuce, green leaf.....	10 lbs.	0.060	100	Eggs.....	2	0.054
120	Meat, med. fat.....	4 oz.	0.012	100	Kale.....	½ cup	0.225
40	Molasses.....	2 T.	0.110	60	Meat, med. fat.....	2 oz.	0.006
200	Oranges.....	2 sm.	0.066	40	Molasses.....	2 T.	0.110
400	Potato.....	2 L.	0.044	100	Orange.....	1 sm.	0.033
30	Raisins.....	2 T.	0.023	Total Calcium.....			1.204
Total Calcium.....			1.031	Total Phosphorus.....			1.702
Total Phosphorus.....			1.891	Total Iron.....			0.0305
Total Iron.....			0.0330				

* If only this amount of milk and no cheese were used, it would be improbable for the child to eat the following amount of foods.

TABLE 37
PHOSPHORUS*

AVERAGE SERVINGS** OF FRUITS AND VEGETABLES ARRANGED ACCORDING TO
THEIR CONTENT OF PHOSPHORUS

Grams	Food	Phosphorus	Grams	Food	Phosphorus
More than 0.050 Gram			0.030 to 0.021 Gram		
	<i>Vegetables</i>			<i>Fruits</i>	
100	Asparagus.....	0.062	100	Apricots, fresh.....	0.023
100	Artichoke.....	0.093	100	Banana.....	0.028
100	Beans, Lima (C).....	0.073	100	Cherries, fresh, sweet.....	0.022
100	Beans, Lima, dried.....	0.114	100	Gooseberries, fresh.....	0.028
100	Beans, Lima, fresh.....	0.158	100	Grapes, American.....	0.021
30	Beans, navy, pea bean.....	0.139	100	Loganberries, fresh.....	0.024
30	Beans, soy, dried.....	0.175	100	Nectarines.....	0.024
100	Beans, soy, fresh.....	0.272	100	Orange or orange juice.....	0.023
100	Beans, soy, sprouts, fresh.....	0.101	100	Peach.....	0.022
100	Broccoli.....	0.076	100	Persimmon.....	0.021
100	Brussels sprouts.....	0.078	100	Prunes, dried.....	0.026
100	Cabbage, fresh, outer leaf.....	0.072	30	Raspberries (C).....	0.022
100	Cauliflower.....	0.072	100	Rhubarb, fresh.....	0.025
100	Corn, sweet (C).....	0.051	100	Strawberries.....	0.027
100	Corn, sweet, fresh.....	0.120	100	Tangerines.....	0.023
100	Dandelion greens.....	0.070		<i>Vegetables</i>	
100	Kale.....	0.062		Beets (C).....	0.029
100	Leeks.....	0.056	100	Carrots (C).....	0.024
30	Lentils, dried.....	0.110	100	Cucumber.....	0.022
100	Mushrooms.....	0.098	100	Lettuce, head.....	0.030
100	Okra.....	0.062	100	Peppers, green.....	0.025
100	Parsnips.....	0.080	100	Pickles, cucumber.....	0.022
30	Peas, dried.....	0.119	100	Squash, winter, fresh.....	0.028
100	Peas, fresh.....	0.122	100	Tomatoes (C).....	0.027
100	Peas, green (C).....	0.067	100	Tomatoes, fresh.....	0.027
100	Potato, white.....	0.056			
100	Spinach.....	0.055			
100	Turnip greens.....	0.085			
0.050 to 0.041 Gram			0.020 to 0.011 Gram		
	<i>Fruits</i>			<i>Fruits</i>	
30	Currants, dried.....	0.041	100	Apricots (C).....	0.015
	<i>Vegetables</i>		100	Blackberries (C).....	0.019
100	Beans, snap.....	0.044	100	Blueberries.....	0.013
100	Beets.....	0.043	100	Cantaloupe.....	0.016
100	Beet greens.....	0.045	100	Cherries (C).....	0.014
100	Mushrooms (C).....	0.046	30	Dates, dried.....	0.018
100	Onions.....	0.044	100	Figs (C).....	0.020
100	Potato, sweet.....	0.049	100	Fruit cocktail (C).....	0.012
100	Rutabaga.....	0.041	100	Grapefruit (C).....	0.014
100	Yams.....	0.050	100	Grapefruit, fresh.....	0.013
			100	Grapefruit juice.....	0.012
0.040 to 0.031 Gram			100	Grapes, green, seedless.....	0.020
	<i>Fruits</i>		100	Grapes, Malaga or Tokay.....	0.020
30	Apricots, dried.....	0.036	100	Honeydew melon.....	0.016
100	Avocado.....	0.038	100	Peaches (C).....	0.014
100	Blackberries.....	0.032	100	Pear, fresh.....	0.016
100	Currants, fresh.....	0.036	100	Pineapple, fresh.....	0.011
30	Figs, dried.....	0.031	100	Plums (C).....	0.012
100	Figs, fresh.....	0.035	100	Plums, fresh.....	0.020
100	Pomegranate.....	0.037	100	Watermelon.....	0.012
30	Raisins.....	0.039		<i>Vegetables</i>	
100	Raspberries.....	0.037	100	Beans, snap (C).....	0.019
	<i>Vegetables</i>		50	Celery, raw.....	0.020
100	Asparagus (C).....	0.034	50	Chicory or endive, curly.....	0.019
100	Cabbage, head.....	0.031	100	Lettuce, green leaf.....	0.020
100	Carrots.....	0.037	50	Pickles, mixed, sweet.....	0.012
100	Chard, Swiss.....	0.036	100	Squash, summer.....	0.015
100	Chicory or endive.....	0.038	100	Tomato juice.....	0.015
100	Eggplant.....	0.037			
100	Escarole.....	0.033			
100	Pumpkin (C).....	0.036			
100	Radishes.....	0.031			
100	Sauerkraut.....	0.031			
100	Spinach (C).....	0.033			
100	Squash, winter (C).....	0.036			
0.010 to 0.002 Gram				<i>Fruits</i>	
			100	Apple.....	0.010
			100	Applesauce.....	0.006
			100	Blueberries (C).....	0.008
			20	Cranberry sauce.....	0.002
			100	Lemon.....	0.010
			100	Lime.....	0.010
			100	Pears (C).....	0.010
			100	Pineapple (C).....	0.007
			100	Pineapple juice.....	0.008

* See p. 125, "Factors Affecting Nutritive Values."

** Cf. Table of Food Values and Measures (Table 22) for amounts of average servings.

TABLE 38
PHOSPHORUS EXCHANGES

Approximately 0.056 gram. Various foods equivalent in phosphorus to 4 tablespoons of milk or $\frac{1}{4}$ cup

Grams	Food	Household Measure	Grams	Food	Household Measure
<i>Bread and Cereals</i>			<i>Meats</i>		
15	Bread, wh. wheat.....	$\frac{1}{2}$ sl.	30	Bacon, ck. crisp	3 sl. 5" long
60	Bread, rye, light.....	2 sl.	15	Liver, beef	$\frac{1}{2}$ oz.
60	Bread, white, enr.....	2 sl.	30	Meat, lean.....	1 oz.
10	Cream of Wheat, dry.....	1 T. ($\frac{1}{4}$ c. ck.)	30	Meat, med. fat.....	1 oz.
13	Oats, rolled, dry.....	$1\frac{1}{2}$ T. ($\frac{1}{4}$ c. ck.)	23	Poultry, dark.....	$\frac{3}{4}$ oz.
15	Ralston, dry.....	1 T. ($\frac{3}{8}$ c. ck.)	30	Poultry, light.....	1 oz.
15	Shredded wheat.....	$\frac{1}{2}$ b.	<i>Nuts</i>		
<i>Dairy Products</i>			12	Almonds.....	10-12 nuts
10	Cheese, American.....	2 t.	15	Peanut butter.....	1 T.
20	Cheese, cottage.....	4 t.	15	Pecans.....	9-12 H.
105	Cream, heavy.....	$\frac{1}{2}$ c. sc.	15	Walnuts.....	8-16 H.
75	Cream, light.....	5 T.	<i>Vegetables</i>		
25	Egg, whole.....	$\frac{1}{2}$	15	Beans, Lima, dried.....	1 T.
9	Egg, yolk.....	$\frac{1}{2}$	40	Beans, Lima, fresh.....	3 T.
30	Milk, evaporated.....	2 T.	12	Beans, navy.....	$\frac{1}{4}$ c. sc.
60	Milk, skim.....	4 T.	125	Beans, string.....	1 hp. s.d.
60	Milk, whole.....	4 T.	70	Brussels sprouts.....	6 av.
<i>Fish</i>			150	Carrots.....	$1\frac{1}{2}$ L.
30	Cod.....	1 oz.	70	Cauliflower.....	4 r.T.
30	Flounder.....	1 oz.	50	Corn.....	$\frac{1}{2}$ m. ear or 4 T.
30	Haddock.....	1 oz.	80	Dandelion greens.....	$\frac{4}{5}$ c.
30	Oysters.....	2 m.	60	Mushrooms.....	6 sm.
23	Salmon, fresh.....	$\frac{3}{4}$ oz.	67	Parsnips.....	$\frac{1}{3}$ L.
15	Shad.....	$\frac{1}{2}$ oz.	50	Peas.....	$\frac{3}{8}$ c.
<i>Fruits</i>			15	Peas, dried.....	1 T., $\frac{1}{4}$ c. ck.
200	Bananas.....	2 m.	100	Potato, sweet.....	1 sm.
200	Blackberries.....	2 s.d.	100	Potato, white.....	1 sm.
250	Cherries.....	63	125	Pumpkin.....	$\frac{5}{8}$ c.
75	Currants.....	$5\frac{1}{2}$ T.	100	Spinach.....	$\frac{1}{2}$ c.
60	Figs, dried.....	4 sm.	125	Turnips.....	$\frac{5}{8}$ c.
250	Grapes.....	55			
45	Peaches, dried.....	3 H.			
500	Pineapple.....	5 sl. $\frac{3}{4}$ " thick			
60	Prunes.....	6 m.			
45	Raisins.....	3 T.			
150	Raspberries, red.....	$\frac{3}{8}$ c.			
200	Strawberries.....	20 L.			

TABLE 39
PHOSPHORUS
VARIOUS COMBINATIONS OF FOODS SUPPLYING A DAY'S REQUIREMENT
Daily Requirement: Adult—1.5 grams. Children (under 12)—1.0 gram

Adult				Child			
Grams	Food	Household Measure	Phosphorus Grams	Grams	Food	Household Measure	Phosphorus Grams
150	Bread, whole wheat.....	5 sl.	0.600	120	Bread, whole wheat.....	4 sl.	0.490
100	Eggs.....	2	0.210	50	Egg.....	1	0.105
120	Meat, med. fat.....	4 oz.	0.236	960	Milk.....	4 c.	0.892
480	Milk.....	2 c.	0.446	180	Oats, rolled, ck.....	1 s. d.	0.131
180	Oats, rolled, ck.....	1 s. d.	0.131	200	Potato.....	1 L.	0.112
200	Potato.....	1 L.	0.112				
Total Phosphorus.....			1.735	Total Phosphorus.....			1.720
Total Calcium.....			0.759	Total Calcium.....			1.268
Total Iron.....			0.0129	Total Iron.....			0.0079
200	Apple.....	1 L.	0.020	100	Banana.....	1 m.	0.028
100	Beans, string.....	1 s. d.	0.044	120	Bread, whole wheat.....	4 sl.	0.490
150	Bread, whole wheat.....	5 sl.	0.600	100	Carrots.....	1 s. d.	0.037
100	Carrots.....	1 s. d.	0.037	50	Egg.....	1	0.105
50	Egg.....	1	0.105	60	Meat, med. fat.....	2 oz.	0.118
90	Meat, med. fat.....	3 oz.	0.177	720	Milk.....	3 c.	0.669
480	Milk.....	2 c.	0.446	180	Oats, rolled, ck.....	1 s. d.	0.131
100	Orange.....	1 sm.	0.023	100	Orange.....	1 sm.	0.023
200	Potato.....	1 L.	0.112	100	Peas.....	1 s. d.	0.122
30	Shredded wheat.....	1 b.	0.116	200	Potato.....	1 L.	0.112
100	Tomato.....	1 m.	0.027				
Total Phosphorus.....			1.707	Total Phosphorus.....			1.825
Total Calcium.....			0.885	Total Calcium.....			1.093
Total Iron.....			0.0141	Total Iron.....			0.0130
200	Apple.....	1 L.	0.020	200	Apple.....	1 L.	0.020
100	Banana.....	1 m.	0.028	100	Banana.....	1 m.	0.028
100	Beans, string.....	1 s. d.	0.044	100	Beans, string.....	1 s. d.	0.044
150	Bread, whole wheat.....	5 sl.	0.600	150	Bread, whole wheat.....	5 sl.	0.600
100	Broccoli.....	1 s. d.	0.076	100	Carrots.....	1 s. d.	0.037
100	Carrots.....	1 s. d.	0.037	50	Egg.....	1	0.105
50	Egg.....	1	0.105	60	Meat, med. fat.....	2 oz.	0.118
100	Lettuce.....	½ hd.	0.030	720	Milk.....	3 c.	0.669
90	Meat, med. fat.....	3 oz.	0.177	200	Potato.....	1 L.	0.112
480	Milk.....	2 c.	0.446	30	Shredded wheat.....	1 b.	0.116
100	Orange.....	1 sm.	0.023	100	Tomato.....	1 m.	0.027
200	Potato.....	1 L.	0.112				
100	Tomato.....	1 m.	0.027	Total Phosphorus.....			1.876
Total Phosphorus.....			1.725	Total Calcium.....			1.140
Total Calcium.....			1.032	Total Iron.....			0.0137
Total Iron.....			0.0154	150	Bread, whole wheat.....	5 sl.	0.600
100	Beans, string.....	1 s. d.	0.044	100	Carrots.....	1 s. d.	0.037
150	Bread, whole wheat.....	5 sl.	0.600	60	Meat, med. fat.....	2 oz.	0.118
50	Egg.....	1	0.105	960	Milk.....	4 c.	0.892
720	Milk.....	3 c.	0.669	100	Orange.....	1 sm.	0.023
180	Oats, rolled, ck.....	1 s. d.	0.131	100	Peas.....	1 s. d.	0.122
100	Pineapple.....	1 sl.	0.011	200	Potato.....	1 L.	0.112
200	Potato.....	1 L.	0.112				
100	Tomato.....	1 m.	0.027	Total Phosphorus.....			1.904
Total Phosphorus.....			1.699	Total Calcium.....			1.344
Total Calcium.....			1.095	Total Iron.....			0.0108
Total Iron.....			0.0105				

TABLE 40

IRON*

AVERAGE SERVINGS** OF FRUITS AND VEGETABLES ARRANGED ACCORDING TO THEIR CONTENT OF IRON

Grams	Food	Iron	Grams	Food	Iron
More than 1.5 Milligrams			0.9 to 0.5 Milligram—Continued		
<i>Fruits</i>			<i>Fruits—Continued</i>		
100	Loganberries, fresh.....	2.1	100	Peaches, fresh.....	0.6
30	Peaches, dried.....	2.1	100	Pineapple (C).....	0.6
<i>Vegetables</i>			100	Plums, fresh.....	0.5
100	Beans, Lima (C).....	1.7	100	Raspberries.....	0.9
30	Beans, Lima, dried.....	2.3	100	Raspberries (C).....	0.5
100	Beans, Lima, fresh.....	2.3	100	Rhubarb, fresh.....	0.5
30	Beans, navy, pea bean.....	3.1	100	Strawberries.....	0.8
30	Beans, soy, dried.....	2.4	<i>Vegetables</i>		
100	Beans, soy, fresh.....	2.8	100	Artichoke, French.....	0.5
100	Beans, soy, sprouts, fresh.....	1.6	100	Beets (C).....	0.6
100	Beet greens.....	3.2	100	Cabbage, head.....	0.5
100	Cabbage, outer leaf.....	1.8	100	Cabbage (C).....	0.6
100	Chard, Swiss.....	4.0	100	Carrots, raw.....	0.8
100	Dandelion greens.....	3.1	100	Celery.....	0.4
100	Endive or chicory.....	1.7	100	Corn, sweet (C).....	0.5
100	Escarole.....	1.8	100	Corn, sweet, fresh.....	0.5
100	Kale, fresh.....	2.2	100	Kohlrabi.....	0.7
30	Lentils, dried.....	2.5	100	Leeks.....	0.7
100	Peas (C), green.....	1.8	100	Lettuce, head.....	0.5
30	Peas, dried.....	1.8	100	Mushrooms.....	0.7
100	Peas, fresh, green.....	1.9	100	Okra.....	0.8
100	Spinach (C).....	1.6	100	Onions, mature.....	0.5
100	Spinach, fresh.....	3.0	100	Onions, young.....	0.6
100	Watercress.....	3.0	100	Parsnip.....	0.7
1.5 to 1.0 Milligram			100	Pickles, dill.....	0.9
<i>Fruits</i>			100	Potato, sweet.....	0.7
30	Apricots, dried.....	1.5	100	Potato, white.....	0.7
100	Loganberries (C).....	1.5	100	Pumpkin.....	0.7
100	Plums (C).....	1.1	100	Sauerkraut.....	0.5
100	Pomegranate.....	1.2	100	Squash, winter (C).....	0.7
100	Prune juice.....	1.4	100	Squash, winter, fresh.....	0.6
30	Prunes.....	1.2	100	Tomatoes (C).....	0.6
30	Raisins.....	1.0	100	Tomatoes, fresh.....	0.6
<i>Vegetables</i>			100	Turnip, white.....	0.5
100	Asparagus.....	1.0	0.4 to 0.1 Milligram		
100	Beans, snap (C).....	1.4	<i>Fruits</i>		
100	Beans, snap, fresh.....	1.1	100	Apple, fresh.....	0.3
100	Beets, fresh.....	1.0	100	Applesauce.....	0.2
100	Broccoli.....	1.3	100	Apricots (C).....	0.3
100	Brussels sprouts.....	1.3	100	Cherries (C).....	0.3
100	Cauliflower.....	1.1	100	Figs (C).....	0.4
100	Radishes, red.....	1.0	100	Fruit cocktail.....	0.4
100	Yams, fresh.....	1.1	100	Grapefruit (C).....	0.3
0.9 to 0.5 Milligram			100	Grapefruit, fresh.....	0.3
<i>Fruits</i>			100	Grapefruit juice.....	0.4
100	Apricots, fresh.....	0.5	100	Honeydew melon.....	0.4
100	Avocado.....	0.6	100	Lemon.....	0.1
100	Banana.....	0.6	100	Lime.....	0.1
100	Blackberries (C).....	0.6	100	Orange and orange juice.....	0.4
100	Blackberries, fresh.....	0.6	100	Peaches (C).....	0.4
100	Blueberries (C).....	0.5	100	Pears (C).....	0.2
100	Blueberries, fresh.....	0.8	100	Pears, fresh.....	0.3
100	Cherries, fresh, sweet.....	0.5	100	Persimmons.....	0.3
100	Cranberries, fresh.....	0.6	100	Pineapple, fresh.....	0.3
30	Currants, dried.....	0.8	100	Watermelon.....	0.2
30	Dates, dried.....	0.6	<i>Vegetables</i>		
30	Figs, dried.....	0.9	100	Artichoke, Jerusalem.....	0.4
30	Figs, fresh.....	0.7	100	Cucumber.....	0.4
100	Grapes, American.....	0.6	100	Eggplant.....	0.4
100	Grapes, green, seedless.....	0.9	100	Mushrooms (C).....	0.3
100	Grapes, Malaga or Tokay.....	0.6	100	Parsley.....	0.4
100	Nectarines.....	0.5	100	Peppers, green.....	0.4
			100	Rutabaga, raw.....	0.4
			100	Squash, summer.....	0.4
			100	Tomato juice.....	0.4

* See p. 125, "Factors Affecting Nutritive Values"

** Cf. Tables of Food Values and Measures (Table 22) for amounts of average servings.

TABLE 41
IRON EXCHANGES

Approximately 1.4 milligrams. Various foods equivalent in iron to 1 egg

Grams	Food	Household Measure	Grams	Food	Household Measure
	<i>Bread and Cereals</i>		45	Beef, m. fat.....	1½ oz.
60	Bread, wh. wheat.....	2 sl.	15	Liver, beef.....	½ oz.
90	Bread, rye, dark.....	3 sl.			
75	Bread, white, enr.....	2½ sl.		<i>Miscellaneous</i>	
15	Cream of Wheat, ck.....	1 T.	45	Maple syrup.....	2 T.
160	Oats, rolled, ek.....	¾ c.	20	Molasses.....	1 T.
30	Shredded Wheat.....	1 b.			
	<i>Dairy Products</i>		30	Almonds.....	24-30 nuts
18	Egg yolk.....	1	60	Peanuts.....	64-68 nuts
50	Egg.....	1	60	Peeans.....	38-48 H.
1920	Milk.....	2 qts.	30	Walnuts.....	16-32 H.
	<i>Fish</i>			<i>Vegetables</i>	
120	Flounder.....	4 oz.	150	Asparagus.....	12 st.
90	Herring, smoked.....	3 oz.	15	Beans, Lima, dried.....	¼ c. ck.
23	Oysters.....	1½ m.	50	Beans, Lima, fresh.....	2 r. T.
90	Salmon (C) ..	3 oz.	100	Beans, string.....	½ c.
120	Salmon, fresh.....	4 oz.	50	Beet greens.....	¼ c.
	<i>Fruits</i>		150	Beets.....	3 m.
30	Aprieots, dried.....	4-6 H.	100	Broeeoli.....	½ c.
150	Blackberries.....	1 hp. s.d.	100	Brussels sprouts.....	10-11 av.
150	Blueberries.....	1 e.	150	Cauliflower.....	1 c.
150	Currants, fresh.....	¾ c.	33	Chard.....	2 r. T.
60	Dates.....	6-8	50	Dandelion greens.....	¼ e.
45	Figs.....	3	150	Lettuce, leaf, green.....	15 lvs.
45	Peaches, dried.....	1½ H.	200	Parsnips.....	1 c. or 1 L.
500	Pears....	5 m.	66	Peas.....	⅓ c.
30	Prunes.....	3 m.	20	Peas, dried.....	1½ T.
45	Raisins.....	3 T.	200	Potato, sweet.....	1 L.
150	Raspberries, red.....	1 hp. c.	200	Potato, white.....	1 L.
	<i>Meat</i>		150	Pumpkin.....	¾ e.
150	Bacon, ck. erisp.....	15 strips	50	Spinach.....	¼ c.
30	Chicken, dark meat.....	1 oz.	50	Watercress.....	½ bunch
45	Chieken, light meat.....	1½ oz.			
45	Beef, lean.....	1½ oz.			

TABLE 42
IRON
VARIOUS COMBINATIONS OF FOODS SUPPLYING A DAY'S REQUIREMENT
Daily Requirement: Adult—12 milligrams. Child (9 years)—10 milligrams

Adult				Child			
Grams	Food	Household Measure	Iron Milli-grams	Grams	Food	Household Measure	Iron Milli-grams
150	Bread, whole wheat.....	5 sl.	4.0	30	Bread, whole wheat.....	1 sl.	0.8
100	Eggs.....	2	2.8	50	Egg.....	1	1.4
480	Milk.....	2 c.	0.3	720	Milk.....	3 c.	0.5
180	Oats, rolled, ck.....	1 s.d.	1.2	180	Oats, rolled, ck.....	1 s.d.	1.2
200	Potato.....	1 L.	1.4	100	Peas.....	1 s.d.	1.9
100	Spinach.....	1 s.d.	3.0	200	Potato.....	1 L.	1.4
				100	Spinach.....	1 s.d.	3.0
Total Iron.....			12.7	Total Iron.....			10.2
Total Calcium.....			822.0	Total Calcium.....			1031.0
Total Phosphorus.....			1554.0	Total Phosphorus.....			1314.0
200	Apple.....	1 L.	0.6	200	Apple.....	1 L.	0.6
100	Banana.....	1 m.	0.6	100	Banana.....	1 m.	0.6
100	Beans, string.....	1 s.d.	1.1	100	Beans, string.....	1 s.d.	1.1
120	Bread, white, enr.....	4 sl.	2.4	100	Carrots.....	1 s.d.	0.8
100	Carrots.....	1 s.d.	0.8	100	Carrots.....	1 s.d.	0.8
480	Milk.....	2 c.	0.3	480	Milk.....	2 c.	0.3
100	Orange.....	1 sm.	0.4	30	Molasses.....	2 T. sc.	2.6
200	Potato.....	1 L.	1.4	100	Orange.....	1 sm.	0.4
100	Swiss chard.....	1 s.d.	4.0	200	Potato.....	1 L.	1.4
100	Tomato.....	1 m.	0.6	100	Spinach.....	1 s.d.	3.0
Total Iron.....			12.2	Total Iron.....			10.8
Total Calcium.....			835.0	Total Calcium.....			933.0
Total Phosphorus.....			893.0	Total Phosphorus.....			785.0
150	Bread, whole wheat.....	5 sl.	4.0	90	Bread, whole wheat.....	3 sl.	2.4
100	Broccoli.....	1 s.d.	1.3	100	Broccoli.....	1 s.d.	1.3
120	Meat, med. fat.....	4 oz.	3.2	60	Meat, med. fat.....	2 oz.	1.6
480	Milk.....	2 c.	0.3	720	Milk.....	3 c.	0.5
200	Potato.....	1 L.	1.4	200	Potato.....	1 L.	1.4
30	Prunes.....	3 m.	1.2	60	Prunes.....	6 m.	2.4
30	Shredded wheat.....	1 b.	1.1	30	Shredded wheat.....	1 b.	1.1
Total Iron.....			12.5	Total Iron.....			10.7
Total Calcium.....			847.0	Total Calcium.....			1104.0
Total Phosphorus.....			1612.0	Total Phosphorus.....			1503.0
180	Cream of wheat, ck.....	1 s.d.	12.7	180	Cream of wheat, ck.....	1 s.d.	12.7
100	Eggs.....	2	2.8	100	Eggs.....	2	2.8
120	Meat, lean.....	4 oz.	3.2	60	Meat, lean.....	2 oz.	1.6
480	Milk.....	2 c.	0.3	480	Milk.....	2 c.	0.3
100	Peas.....	1 s.d.	1.9	100	Peas.....	1 s.d.	1.9
30	Raisins.....	2 T.	1.0	30	Raisins.....	2 T.	1.0
Total Iron.....			21.9	Total Iron.....			20.3
Total Calcium.....			828.0	Total Calcium.....			822.0
Total Phosphorus.....			1230.0	Total Phosphorus.....			1108.0

TABLE 43

COPPER*

AVERAGE SERVINGS OF SOME COMMON FOODS ARRANGED ACCORDING TO THEIR
CONTENT OF COPPER**

Grams	Food	Copper	Grams	Food	Copper
More than 300 Micrograms			99 to 10 Micrograms		
<i>Cereals</i>			<i>Bread and Cereals</i>		
100	Corn.....	449	30	Bread, white.....	62
<i>Fish</i>			30	Flour, white.....	44
30	Oysters.....	1087	30	Rice, white.....	55
<i>Fruits</i>			<i>Dairy Products</i>		
100	Avocado.....	688	240	Milk.....	84
<i>Meat, Poultry</i>			<i>Fish</i>		
30	Liver.....	1035	30	Haddock.....	65
<i>Vegetables</i>			30	Halibut.....	48
100	Kale.....	328	30	Mackerel.....	69
299 to 200 Micrograms			<i>Fruits</i>		
<i>Cereals</i>			100	Apple.....	71
30	Barley, entire.....	226	100	Cantaloupe.....	57
30	Oats.....	221	100	Grapes.....	98
30	Rye, entire.....	197	100	Orange or orange juice.....	76
30	Wheat.....	236	100	Plums.....	80
<i>Fruits</i>			30	Prunes, dried.....	87
100	Banana.....	200	100	Strawberries.....	75
<i>Vegetables</i>			<i>Sweets</i>		
30	Beans, dry.....	287	30	Honey.....	23
30	Beans, Lima, dry.....	275	<i>Vegetables</i>		
30	Peas, dried.....	241	100	Cabbage.....	99
199 to 100 Micrograms			100	Lettuce, head.....	69
<i>Cereals</i>			100	Tomato.....	97
30	Flour, whole wheat.....	131	100	Turnip.....	85
<i>Dairy Products</i>					
50	Egg.....	127			
<i>Fruits</i>					
100	Pears.....	134			
<i>Vegetables</i>					
100	Asparagus.....	141			
100	Beans, string or snap.....	126			
100	Beets.....	187			
100	Carrots.....	111			
100	Lettuce, green.....	145			
100	Onions.....	130			
100	Pepper, green.....	107			
100	Potato, sweet.....	184			
100	Potato, white.....	164			
100	Spinach.....	197			

* Daily Requirement: Adult—1-2 milligrams. Infants and children—0.05 milligram per kilogram of average body weight.

** Sherman, Chemistry of Food and Nutrition, 7th ed., Macmillan Co., 1946.

TABLE 44
MANGANESE*

Average Servings of Some Common Foods Arranged According to Their Content of Manganese**

Grams	Food	Manga- nese	Grams	Food	Manga- nese
More than 400 Micrograms			199-100 Micrograms		
	<i>Cereals</i>			<i>Fruits</i>	
30	Barley, entire.....	505	30	Prunes, dried.....	131
30	Flour, whole wheat.....	1284		<i>Meat</i>	
30	Oats.....	1484	30	Liver.....	102
30	Rye, entire.....	920		<i>Vegetables</i>	
30	Wheat.....	1377	100	Asparagus.....	190
	<i>Fruits</i>		100	Cabbage.....	114
100	Banana.....	642	100	Pepper, green.....	126
	<i>Vegetables</i>		100	Potato.....	173
30	Beans, dry.....	451	100	Tomato.....	189
30	Beans, Lima, dry.....	497			
100	Beets.....	577			
100	Corn.....	683			
100	Kale.....	587			
100	Lettuce, head.....	777			
100	Lettuce, green.....	1240			
30	Peas, dried.....	597			
100	Potato, sweet.....	407			
100	Spinach.....	828			
399-300 Micrograms			99-0 Micrograms		
	<i>Cereals</i>			<i>Bread</i>	
30	Rice, white.....	304	30	Bread, white.....	93
	<i>Vegetables</i>			<i>Dairy Products</i>	
100	Beans, string or snap.....	326	50	Egg.....	17
100	Onions.....	363	240	Milk.....	14
299-200 Micrograms				<i>Fish</i>	
	<i>Cereals</i>		30	Haddock.....	5
30	Flour, white.....	214	30	Halibut.....	3
	<i>Fruits</i>		30	Mackerel.....	6
100	Avocado.....	291	30	Oysters.....	89
100	Strawberries.....	219		<i>Sweets</i>	
	<i>Vegetables</i>		30	Honey.....	63
100	Carrots.....	247		<i>Fruits</i>	
			100	Apple.....	84
			100	Cantaloupe.....	42
			100	Grapes.....	83
			100	Orange or juice.....	25
			100	Pears.....	64
			100	Plums.....	96
				<i>Vegetables</i>	
			100	Turnip.....	83

* Manganese requirement of man is not known—normal diet will usually supply adequate amounts.

** Sherman, Chemistry of Food and Nutrition, 7th ed., Macmillan Co., 1946.

TABLES TO SIMPLIFY COMPUTATION OF DIET

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TABLE 45
POTASSIUM

AVERAGE SERVINGS* OF SOME COMMON** FOODS ARRANGED ACCORDING TO
THEIR CONTENT OF POTASSIUM***

Grams	Food	Potassium	Grams	Food	Potassium
More than 400 Milligrams			400-200 Milligrams—Continued		
<i>Dairy Products</i>			<i>Meat, Poultry—Continued</i>		
240	Milk, goat.....	432.0	90	Chicken, leg meat.....	225.0
<i>Fish</i>			90	Lamb, lean.....	306.0
90	Halibut.....	486.0	100	Hash, corned beef (C).....	200.0
<i>Fruits</i>			90	Lamb, lean.....	342.0
30	Apricots, dried.....	510.0	90	Liver, calf.....	342.0
100	Apricots, fresh.....	440.0	90	Pork, lean.....	234.0
<i>Sweets</i>			90	Turkey, breast meat.....	288.0
30	Molasses, cane.....	450.0	90	Turkey, leg meat.....	279.0
<i>Vegetables</i>			90	Vcal, lean.....	297.0
30	Bean, Great Northern, dry.....	420.0	<i>Miscellaneous</i>		
100	Bean, Lima, fresh.....	650.0	100	Pickles, dill.....	200.0
100	Beet greens.....	570.0	<i>Nuts</i>		
100	Brussel sprouts.....	450.0	30	Almonds.....	207.0
100	Carrot.....	410.0	30	Almonds, roasted in oil and salted.....	213.0
100	Chard, Swiss.....	720.0	30	Brazil nuts, roasted in oil and salted.....	219.0
100	Dandelion.....	430.0	30	Coconut, dry, shredded.....	231.0
100	Kale.....	410.0	30	Peanut butter.....	246.0
100	Mushrooms.....	520.0	30	Peanuts, roasted in oil and salted.....	210.0
100	Mustard greens.....	450.0	30	Peanuts, roasted in shell.....	222.0
100	Parsnips.....	740.0	<i>Sweets</i>		
100	Potato, sweet, less skin.....	530.0	30	Chocolate, unsweetened.....	249.0
100	Potato, white, less skin.....	410.0	<i>Vegetables</i>		
100	Pumpkin.....	480.0	100	Asparagus tips.....	240.0
30	Soy bean, dry.....	570.0	100	Asparagus tips, frozen.....	320.0
100	Spinach.....	780.0	100	Beans, baked with pork.....	210.0
400-200 Milligrams			100	Beans, in pods.....	300.0
<i>Cereals</i>			100	Beans, Lima (C).....	210.0
30	Bran.....	360.0	30	Beans, navy, dry.....	390.0
30	Flour, buckwheat.....	204.0	100	Beets.....	350.0
30	Flour, rye, dark.....	258.0	100	Broccoli.....	400.0
<i>Dairy Products</i>			100	Brussel sprouts, frozen.....	300.0
240	Buttermilk, cultured.....	336.0	100	Cabbage.....	230.0
128	Milk, evaporated.....	340.0	100	Cauliflower, bud.....	400.0
30	Milk, whole, dry.....	330.0	100	Cauliflower, bud, frozen.....	290.0
240	Milk, whole, liquid.....	336.0	100	Celery.....	300.0
<i>Fish</i>			100	Corn, sweet, yellow (C).....	200.0
100	Clams.....	240.0	100	Corn, sweet, yellow, milk stage.....	370.0
90	Cod.....	324.0	100	Cucumber.....	230.0
90	Cod, frozen fillets.....	360.0	100	Endive.....	400.0
90	Salmon, fresh.....	369.0	100	Lettuce, green leaf.....	230.0
90	Salmon (C).....	270.0	100	Okra.....	220.0
90	Scallops, frozen.....	378.0	100	Peas, fresh.....	370.0
<i>Fruits</i>			30	Peas, dry, split.....	264.0
50	Banana.....	210.0	45	Potato chips.....	396.0
100	Cantaloupe.....	230.0	100	Pumpkin (C).....	240.0
100	Cherry, dark, sweet.....	260.0	100	Radishes.....	260.0
30	Currants, dried.....	219.0	100	Spinach (C).....	260.0
30	Dates.....	237.0	100	Spinach, frozen.....	380.0
30	Figs, dried.....	234.0	100	Squash, acorn.....	260.0
100	Grapefruit.....	200.0	100	Squash, Hubbard.....	240.0
100	Persimmons, wild.....	310.0	100	Squash, yellow, summer.....	200.0
100	Pineapple, fresh.....	210.0	100	Tomato.....	230.0
100	Pomegranate.....	200.0	100	Tomato juice (C).....	230.0
100	Prunes, canned in syrup.....	220.0	100	Turnip, yellow.....	260.0
100	Prune juice, unsweetened.....	260.0	199-100 Milligrams		
30	Raisins, seedless.....	216.0	<i>Beverages</i>		
<i>Meat, Poultry</i>			230	Ale, mild, bottled.....	151.5
60	Bacon, cooked, crisp.....	234.0	230	Beer.....	105.8
90	Beef, lean.....	324.0	100	Cider.....	100.0
90	Chicken, breast meat.....	288.0	100	Grape juice.....	120.0

TABLE 45—Continued

Grams	Food	Potassium	Gram	Food	Potassium
199-100 Milligrams—Continued			199-100 Milligrams—Continued		
<i>Breads, Cereals</i>			<i>Vegetables—Continued</i>		
44	Boston brown bread.....	158.4	100	Beets (C).....	120.0
30	Oats, rolled.....	102.0	100	Carrots (C).....	110.0
30	Pettijohn.....	114.0	100	Corn, awheat, yellow, frozen.....	190.0
30	Ralston.....	103.0	100	Eggplant.....	190.0
30	Wheat, puffed.....	102.0	100	Lettuce, head.....	140.0
30	Whcatena.....	114.0	100	Onions, white.....	130.0
<i>Dairy Products</i>			100	Pess, frozen.....	160.0
60	Cheese, whey.....	162.0	100	Pepper, green.....	170.0
30	Milk, condensed.....	102.0	100	Tomatoes (C).....	130.0
<i>Fish</i>			Less than 100 Milligrams		
90	Lobster.....	162.0	<i>Beverages</i>		
30	Sardine (herring), canned in oil.....	165.0	100	Wine, port.....	75.0
60	Tuna (C).....	144.0	100	Wine, sauterne.....	87.1
<i>Fruits</i>			<i>Breads, Cereals and Crackers</i>		
100	Blackberries.....	150.0	30	Barley, pearled.....	48.0
100	Currants, fresh.....	160.0	30	Bread, rye and wheat.....	48.0
100	Figs, fresh.....	190.0	30	Bread, part whole wheat.....	75.0
100	Figs, canned in syrup.....	105.0	30	Bread, wheat, white, enr.....	54.0
100	Fruit cocktail, canned in syrup.....	160.0	30	Bread, whole wheat.....	69.0
100	Grapes, Malaga or Tokay.....	160.0	15	Corn, popped, oiled, aalted.....	36.0
100	Grapes, Thompson, seedless.....	180.0	30	Cornmeal, yellow.....	36.0
100	Grapefruit juice, sweetened (C).....	150.0	10	Cracker, graham.....	33.0
100	Lemon, less rind.....	130.0	6	Cracker, soda.....	7.2
100	Orange.....	170.0	30	Cream of wheat, dry, enr. "5 min.".....	25.2
100	Orange juice, unsweetened (C).....	190.0	112	Flour, bleached, enr.....	96.3
100	Peach.....	160.0	30	Flour, white, natural.....	36.0
100	Peaches, frozen in syrup.....	120.0	30	Grapenuts.....	69.0
100	Pear, Bartlett.....	100.0	100	Hominy (C).....	22.0
100	Pineapple, canned in syrup.....	120.0	30	Maltex, dry.....	75.0
100	Pineapple juice, unsweetened (C).....	140.0	20	Matzoth, American wafer.....	24.0
100	Plums.....	170.0	20	Pretzels.....	26.0
100	Plums (C).....	110.0	30	Rice, puffed.....	30.0
30	Prunes, dried.....	180.0	7	Ry-Krisps.....	42.0
100	Raspberries, black.....	190.0	30	Wheat flakes.....	96.0
100	Raspberries, red.....	130.0	15	Wheat, puffed.....	51.0
100	Strawberries.....	180.0	30	Wheat, shredded.....	99.0
100	Tangerines.....	110.0	<i>Dairy Products</i>		
100	Watermelon.....	110.0	5	Butter, lightly salted.....	0.8
<i>Meat</i>			5	Butter, unsalted.....	0.2
30	Bacon, cooked crisp.....	117.0	30	Cheese, American Swiss.....	30.0
90	Duck, leg meat.....	189.0	30	Cheese, Cheddar.....	27.6
60	Frankfort.....	132.0	30	Cheese, cottage.....	21.6
90	Heart, beef.....	144.0	30	Cheese, cream.....	22.0
90	Liver, turkey.....	144.0	30	Cream, whipping (32%).....	16.8
<i>Miscellaneous</i>			30	Egg.....	50.0
20	Catchup, tomato.....	160.0	30	Egg, white.....	30.0
100	Custard.....	175.0	18	Egg, yolk.....	18.0
100	Orange Crush (soft drink).....	100.0	9	Milk, malted.....	64.8
<i>Nuts</i>			30	Milk, skimmed.....	45.0
30	Brazil nuts.....	201.0	<i>Fats</i>		
30	Cashew nuts.....	168.0	15	Lard, and vegetable shortening.....	nil.
30	Cashew nuts, roasted in oil and salted.....	168.0	15	Mayonnaise.....	3.8
30	Chestnuts.....	123.0	15	Oleomargarine.....	8.7
30	Filberts.....	168.0	<i>Fish</i>		
30	Pecans.....	126.0	7	Anchovy paste.....	14.0
30	Walnuts, black.....	138.0	10	Caviar (salmon).....	18.0
30	Walnuts, English.....	135.0	30	Cod, aalted.....	48.0
<i>Soups (diluted)</i>			30	Crab (C).....	33.0
158	Soup, beef (C).....	158.0	30	Shrimp.....	66.0
158	Soup, tomato (C).....	173.8	<i>Fruits</i>		
158	Soup, vegetable (C).....	189.6	100	Apple, less skin.....	71.0
<i>Sweets</i>			100	Applesauce (C).....	55.0
43	Chocolate, milk, bar.....	180.6	100	Apricots, canned in syrup.....	65.0
<i>Vegetables</i>			100	Blueberries.....	89.0
100	Asparagus spears (C).....	130.0	100	Cherries, dark, sweet, canned in syrup.....	77.0
100	Beans, in pods (C).....	120.0	100	Cherries, light, sweet, canned in syrup.....	55.0
100	Beans, in pods, frozen.....	110.0			

TABLE 45—*Concluded*

Grams	Food	Potassium	Grams	Food	Potassium
Less than 100 Milligrams			Less than 100 Milligrams— <i>Continued</i>		
<i>Fruits—Continued</i>			<i>Miscellaneous—Continued</i>		
100	Peaches, canned in syrup.....	31.0	100	Ice cream, vanilla.....	90.0
100	Pears, canned in syrup.....	52.0	10	Olive, green, pickled.....	5.5
100	Rhubarb.....	70.0	10	Olive, ripe, pickled.....	2.3
<i>Meat</i>			30	Vinegar.....	30.0
5	Bouillon cube.....	5.0	<i>Sweets</i>		
30	Pork, salt.....	8.1	11	Fondant, patty or mint.....	12.1
30	Sausage, bologna.....	69.0	20	Jam, grape.....	15.6
60	Sausage, pork.....	84.0	30	Syrup, chocolate.....	39.0
<i>Miscellaneous</i>			20	Syrup, table, corn and cane.....	0.8
3	Cocoa, powder, ordinary, Hershey.	42.0	30	Syrup, maple.....	39.0
			11	Sugar, light brown.....	25.3

* Cf. Table of Food Values and Measures (Table 22) for amounts of average servings.
.. For additional foods see Table 22.
... Mead Johnson Research Laboratory, 1949.

TABLE 46

SODIUM

AVERAGE SERVINGS* OF SOME COMMON** FOODS ARRANGED ACCORDING TO THEIR CONTENT OF SODIUM***

Grams	Food	Sodium	Grams	Food	Sodium
More than 500 Milligrams			500-200 Milligrams—Continued		
	<i>Fish</i>			<i>Meat</i>	
7	Anchovy paste.....	686.0	30	Bacon, raw.....	204.0
90	Cod, salted.....	7290.0	30	Bologna.....	390.0
90	Crab (C).....	900.0	60	Sausage, pork.....	444.0
	<i>Meat</i>			<i>Miscellaneous</i>	
30	Bacon, ck. crisp.....	720.0	10	Olive, green, pickled.....	240.0
90	Beef, corned.....	1170.0	20	Catchup, tomato.....	260.0
30	Beef, dried.....	1290.0		<i>Vegetables</i>	
60	Frankfort.....	660.0	100	Asparagus spears (C).....	410.0
90	Ham, lean.....	990.0	100	Beans, bk. with pork & tomato.....	480.0
30	Pork, salt.....	540.0	100	Beans, Lima (C).....	310.0
100	Hash, corned beef (C).....	540.0	100	Beans, string.....	410.0
	<i>Miscellaneous</i>		100	Carrots (C).....	280.0
5	Bouillon cube.....	1200.0	100	Chard, Swiss.....	210.0
100	Pickle, large.....	1400.0	100	Corn, sweet, white (C).....	200.0
	<i>Seasonings</i>		100	Corn, sweet, yellow (C).....	210.0
4	Celery salt.....	1120.0	100	Mushrooms (C).....	400.0
4	Salt.....	1573.68	100	Peas (C) less liquor.....	270.0
5	Soda, baking (pure NaHCO) ₃	1368.65	100	Potato, white (C).....	350.0
	<i>Soups (diluted)</i>		100	Spinach (C).....	320.0
158	Soup, beef (C).....	647.0	100	Tomato juice (C).....	230.0
158	Soup, tomato (C).....	600.4			
158	Soup, vegetable (C).....	600.4			
	<i>Vegetables</i>				
100	Sauerkraut (C).....	630.0			
500-200 Milligrams			199-100 Milligrams		
	<i>Breads, Cereals and Crackers</i>			<i>Breads, Cereals and Crackers</i>	
30	All Bran.....	420.0	44	Bread, Boston brown.....	123.2
30	Bread, whole wheat.....	279.0	30	Bread, rye and wheat.....	177.0
15	Corn, popped, oiled, salted....	300.0	30	Bread, white enriched.....	192.0
20	Pretzel.....	340.0	30	Corn Flakes.....	198.0
30	Rice Flakes.....	216.0	30	Grapenuts.....	198.0
30	Wheat Flakes.....	390.0	50	Hominy (C).....	125.0
	<i>Dairy Products</i>		7	Ry-Krisps.....	105.0
30	Cheese, American (cheddar)....	210.0		<i>Dairy Products</i>	
30	Cheese, processed.....	450.0	15	Butter, salted, average.....	147.0
30	Cheese, Swiss.....	213.0	30	Milk, dried, whole.....	123.0
30	Cheese, whey.....	480.0	120	Milk, evaporated.....	120.0
240	Milk, buttermilk, cultured.....	312.0	240	Milk, skimmed.....	124.8
	<i>Fish</i>		210	Milk, whole.....	120.0
10	Caviar (salmon).....	220.0		<i>Fats</i>	
90	Cod, frozen fillets.....	360.0	15	Oleomargarine.....	165.0
90	Salmon (C).....	486.0		<i>Fish</i>	
30	Sardine (Pilchard) canned in natural sauce.....	228.0	100	Clams.....	180.0
60	Tuna (C).....	480.0	30	Sardine (herring) canned in oil.....	153.0
			30	Sardine (Pilchard) canned in tomato sauce.....	120.0
			90	Scallops, frozen.....	135.0

TABLES TO SIMPLIFY COMPUTATION OF DIET

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TABLE 46—Continued

Grams	Food	Sodium	Grams	Food	Sodium
199-100 Milligrams—Continued			Less Than 100 Milligrams—Continued		
<i>Meat</i>			<i>Meat</i>		
90	Brain, pig.....	135.0	90	Beef, lean.....	45.9
90	Kidneys, beef.....	189.0	90	Heart, beef.....	81.0
<i>Nuts</i>			90	Heart, turkey.....	62.1
30	Peanuts, roasted and salted...	138.0	90	Lamb, chop.....	89.2
<i>Vegetables</i>			90	Lamb, lean.....	70.2
100	Beets.....	110.0	90	Liver, calf.....	99.0
100	Beet greens.....	130.0	90	Liver, pig.....	69.3
100	Celery stalks.....	110.0	90	Liver, turkey.....	45.9
100	Kale.....	110.0	90	Pork, lean.....	52.2
100	Peas, frozen.....	100.0	90	Tongue, beef.....	90.0
45	Potato chips.....	153.0	90	Veal, lean.....	43.2
Less than 100 Milligrams			<i>Miscellaneous</i>		
<i>Breads, Cereals and Crackers</i>			5	Mustard, prepared paste.....	65.0
10	Cracker, graham.....	71.0	10	Olive, ripe, pickled.....	98.0
6	Cracker, soda.....	66.0	<i>Nuts</i>		
30	Cream of wheat, dry, enr. "5 min.".....	27.0	30	Almonds, roasted in oil and salted.....	48.0
30	Farina, dry, enr.....	27.0	30	Brazil nuts, roasted in oil and salted.....	57.0
20	Matzoth, American (salted)...	94.0	30	Cashew nuts, roasted in oil and salted.....	60.0
20	Matzoth, unsalted.....	0.2	30	Peanut butter.....	36.0
8	Zwieback.....	20.0	30	Walnuts, black or English...	0.6
<i>Dairy Products</i>			<i>Poultry</i>		
15	Butter, unsalted.....	0.75	90	Chicken, breast meat.....	70.2
30	Cheese, cottage.....	87.0	90	Chicken, leg meat.....	99.0
30	Cheese, cream.....	75.0	90	Duck, breast meat.....	61.2
120	Cream, 32%.....	48.0	90	Duck, leg meat.....	86.4
50	Egg.....	40.5	90	Turkey, breast meat.....	36.0
30	Egg, white.....	33.0	90	Turkey, leg meat.....	82.8
18	Egg, yolk.....	4.7	<i>Sweets</i>		
30	Milk, condensed.....	42.0	50	Cake, sponge.....	(39.5)
9	Milk, malted.....	39.69	43	Chocolate bar, milk.....	37.0
<i>Fats</i>			25	Cookies, oatmeal.....	(45.0)
15	Mayonnaise.....	88.5	20	Cookies, plain.....	(30.6)
<i>Fish</i>			75	Ice cream, vanilla.....	75.0
90	Cod.....	54.0	30	Molasses, cane.....	24.0
90	Halibut.....	50.4	30	Syrup, chocolate.....	18.0
90	Oysters, fresh.....	65.7	20	Syrup, corn, light and dark...	13.6
90	Salmon, fresh.....	43.2	<i>Vegetables</i>		
30	Shrimp.....	42.0	100	Cauliflower, bud.....	24.0
			100	Carrot.....	31.0
			100	Dandelion.....	76.0
			100	Endive.....	18.0
			100	Potato, sweet, less skin....	4.0
			100	Potato, white, less skin....	0.8
			100	Spinach, frozen.....	60.0
			100	Turnip, white.....	37.0
			100	Turnip, yellow.....	5.0

* Cf. Table of Food Values and Measures (Table 22) for amounts of average servings.

** For additional foods see Table 22.

*** Mead Johnson Research Laboratory, 1949. Method of conversion: $\frac{\text{Sodium}}{\text{Sodium Chloride}} = \frac{23}{58.5}$.

TABLE 47
VITAMIN A EXCHANGES*

Approximately 1100 International Units. Various foods equivalent in vitamin A to two eggs

Grams	Food	Household Measure
<i>Dairy Products</i>		
30	Butter**	2 tablespoons
60	Cheese, American (cheddar)	2 ounces
60	Cream, heavy, 40%	4 tablespoons or 7 tablespoons, whipped
120	Cream, light, 20%	8 tablespoons or $\frac{1}{2}$ cup
100	Eggs	2 medium
200	Ice cream, commercial	1 cup
720	Milk, whole	3 cups
37-60	Oleomargarine, fortified	$2\frac{1}{2}$ -4 tablespoons
<i>Fruits</i>		
15	Apricots, dried	2-3 halves
33	Cantaloupe	$\frac{1}{8}$ medium
67	Nectarine	$1\frac{1}{3}$ medium
125	Peach, yellow	$1\frac{1}{4}$ medium
60	Prunes, stoned	6 medium
<i>Meat</i>		
6	Liver, beef	$\frac{1}{6}$ ounce
10	Liver, calves	$\frac{1}{3}$ ounce
10	Liver, pork	$\frac{1}{3}$ ounce
<i>Vegetables</i>		
100	Asparagus	8 stalks, long
15	Beet greens	1 tablespoon
167	Beans, string	$\frac{5}{6}$ cup
30	Broccoli, entire plant	2 tablespoons
10	Carrots	2 teaspoons
40	Chard, Swiss	3 tablespoons, scant
300	Corn, sweet	3 med. ears or $1\frac{1}{2}$ cups
8	Dandelion greens	2 teaspoons, scant
34	Endive	7 leaves
10	Escarole	$\frac{1}{2}$ leaf, small
15	Kale	1 tablespoon
67	Lettuce, green leaf	6-7 leaves
167	Peas, fresh	$\frac{5}{6}$ cup
175	Pepper, green	$1\frac{3}{4}$ large
20	Potato, sweet	$\frac{1}{2}$ small
34	Pumpkin	$\frac{1}{6}$ cup
12	Spinach	1 tablespoon, scant
25	Squash, winter	$\frac{1}{8}$ cup
100	Tomato, fresh	1 medium
34	Watercress	$\frac{1}{3}$ small bunch

* See p. 125, "Factors Affecting Nutritive Values."

** The vitamin A content of butter varies according to the season or the type of feed for the animals.

TABLE 48
THIAMINE EXCHANGES*

Approximately 100 micrograms. Various foods equivalent in thiamine to 1 cup milk

Grams	Food	Household Measure
<i>Breads</i>		
60	Bread, cracked wheat.....	2 slices
60	Bread, rye, light.....	2 slices
45	Bread, white, enriched, minimum.....	1½ slices
38	Bread, whole wheat.....	1½ slices
<i>Cereals</i>		
20	Cream of wheat, enriched, dry.....	2 tablespoons or ½ cup cooked, scant
15	Oats, rolled, dry.....	2 tablespoons or ½ cup cooked
45	Shredded wheat.....	1½ biscuits
<i>Dairy Products</i>		
270	Cheese, American (cheddar).....	9 ounces
360	Cream, heavy, 40%.....	1½ cups
360	Cream, light, 20%.....	1½ cups
75	Egg.....	1½
240	Milk, whole.....	1 cup
<i>Fish</i>		
150	Flounder.....	5 ounces
120	Halibut.....	3 ounces
90	Mackerel.....	3 ounces
45	Oysters.....	3 medium
120	Salmon, canned.....	4 ounces
<i>Fruits</i>		
250	Apples.....	2½ small
100	Banana.....	1 medium
225	Grapefruit.....	1½ small
125	Oranges.....	1½ small or ½ cup juice
125	Pineapple.....	1½ slices, ½" thick
200	Pineapple juice, canned.....	1 cup, scant
67	Plums.....	2 medium
90	Prunes, stoned.....	9 medium
<i>Meat</i>		
90	Beef, lean.....	3 ounces
45	Brain, average.....	1½ ounces
20	Heart, average.....	½ ounce
30	Kidney, average.....	1 ounce
60	Lamb, medium fat.....	2 ounces
38	Liver, beef.....	1½ ounces
20	Liver, pork.....	½ ounce
12	Pork, lean.....	½ ounce
45	Poultry, dark.....	1½ ounces
60	Poultry, light.....	2 ounces
60	Veal, lean.....	2 ounces
<i>Nuts</i>		
10	Brazil nuts.....	1½ nuts
30	Peanuts, roasted.....	32-34 nuts
45	Peanut butter.....	3 tablespoons
15	Pecans, shelled.....	10-12 halves
20	Walnuts.....	11-21 halves
<i>Vegetables</i>		
60	Asparagus, fresh.....	5 stalks
125	Beans, green string, fresh.....	½ cup or 1 heaping sauce dish
40	Beans, Lima, fresh.....	½ cup, scant
10	Beans, soy, dried.....	2 teaspoons
90	Broccoli, entire plant.....	½ cup, scant
150	Carrots.....	1½ large
100	Cauliflower.....	½ cup
80	Kale.....	6-9 tablespoons
150	Lettuce, head.....	½ head
12	Peas, dried.....	1 tablespoon, scant
25	Peas, fresh.....	2 tablespoons
100	Potato, sweet.....	1 small
100	Potato, white.....	1 small
80	Spinach.....	6 tablespoons
150	Tomatoes.....	1½ medium

* See p. 125, "Factors Affecting Nutritive Values."

TABLE 49
RIBOFLAVIN EXCHANGES*

Approximately 175 micrograms. Various foods equivalent in riboflavin to 1 egg

Grams	Food	Household Measure
<i>Breads</i>		
180	Bread, cracked wheat.....	6 slices
450	Bread, rye, light.....	15 slices
120	Bread, white, enriched, minimum.....	4 slices
120	Bread, whole wheat.....	4 slices
<i>Cereals</i>		
120	Oats, rolled, dry.....	1 cup or 2½ cups cooked
120	Shredded wheat.....	4 biscuits
<i>Dairy Products</i>		
38	Cheese, American (cheddar).....	1½ ounces
120	Cream, heavy, 40%.....	½ cup
120	Cream, light, 20%.....	½ cup
50	Egg, whole.....	1
45	Milk, evaporated.....	3 tablespoons
105	Milk, whole.....	7 tablespoons or 3½ ounces
<i>Fish</i>		
120	Crab, canned.....	4 ounces
90	Flounder or sole.....	3 ounces
75	Salmon, canned.....	2½ ounces
120	Salmon, fresh.....	4 ounces
<i>Fruits</i>		
100	Avocado.....	½ medium
300	Bananas.....	3 medium
600	Oranges.....	6 small
300	Peaches.....	3 medium
105	Prunes, stoned.....	10½ medium
<i>Meat</i>		
120	Beef, medium fat.....	4 ounces
120	Brain, average.....	4 ounces
20	Heart, average.....	⅔ ounce
3	Kidney, average.....	⅓ ounce
75	Lamb, medium fat.....	2½ ounces
6	Liver, beef.....	⅓ ounce
5	Liver, calves.....	⅓ ounce
120	Pork, medium fat.....	4 ounces
70	Poultry, dark.....	2½ ounces
<i>Nuts</i>		
26	Almonds.....	18-26 nuts
105	Peanuts.....	112 nuts
105	Peanut butter.....	7 tablespoons
120	Walnuts.....	64-128 halves
<i>Vegetables</i>		
100	Asparagus.....	8 stalks
175	Beans, green string, fresh.....	⅓ cup
134	Beans, Lima, fresh.....	⅓ cup
60	Beans, soy, dried.....	4 tablespoons
100	Beet greens.....	½ cup cooked
88	Broccoli.....	½ cup cooked, scant
300	Carrots.....	3 large
150	Cauliflower.....	1⅓ cups cooked
134	Corn.....	1⅓ medium ears
134	Dandelion greens.....	⅓ cup
85	Endive.....	17 leaves
85	Escarole.....	3½ leaves
50	Kale.....	4-6 tablespoons
250	Lettuce, green leaf.....	25 leaves
100	Peas, fresh.....	½ cup
400	Potatoes, white.....	4 small
67	Spinach.....	⅓ cup cooked
400	Tomatoes.....	4 medium
75	Watercress.....	⅓ small bunch

* See p. 125, "Factors Affecting Nutritive Values."

TABLE 50
NIACIN EXCHANGES*

Approximately 500 Micrograms. Various foods equivalent in niacin to $\frac{1}{2}$ oz. beef

Grams	Food	Household Measure
<i>Breads</i>		
23	Bread, white, enriched, min.....	$\frac{2}{3}$ slice
15	Bread, whole wheat.....	$\frac{1}{4}$ slice
30	Graham crackers.....	3
21	Ry-Krisps.....	3
<i>Cereals</i>		
23	Cornflakes.....	$1\frac{1}{8}$ cups
35	Cream of wheat, dry.....	$3\frac{1}{2}$ tablespoons
23	Macaroni, dry.....	$\frac{1}{4}$ cup, scant
45	Oats, rolled, dry.....	$\frac{3}{8}$ cup
10	Shredded wheat.....	$\frac{1}{3}$ biscuit
<i>Dairy Products</i>		
240	Cheese, American (cheddar).....	8 ounces
1500	Eggs, whole.....	30
480	Milk, whole.....	2 cups
<i>Fish</i>		
15	Flounder or sole.....	$\frac{1}{2}$ ounce
18	Halibut.....	$\frac{2}{3}$ ounce
8	Salmon, fresh or canned.....	$\frac{1}{4}$ ounce
5	Tuna.....	$\frac{1}{6}$ ounce
<i>Fruits</i>		
250	Apples.....	$2\frac{1}{2}$ small
100	Banana.....	1 medium
60	Cantaloupe.....	$\frac{1}{5}$ melon
25	Dates, dried.....	3
250	Grapefruit, fresh.....	$1\frac{1}{4}$ small
250	Oranges.....	$2\frac{1}{2}$ small
60	Peach, yellow, fresh.....	$\frac{3}{5}$ medium
105	Raisins, seeded.....	7 tablespoons
<i>Meat</i>		
10	Beef, medium fat or lean.....	$\frac{1}{3}$ ounce
15	Brain, average.....	$\frac{1}{2}$ ounce
8	Heart, average.....	$\frac{1}{4}$ ounce
15	Kidney, average, stewed.....	$\frac{1}{2}$ ounce
10	Lamb, medium fat.....	$\frac{1}{3}$ ounce
3	Liver, beef.....	$\frac{1}{5}$ ounce
15	Pork, medium fat.....	$\frac{1}{2}$ ounce
8	Poultry, light.....	$\frac{1}{4}$ ounce
<i>Nuts</i>		
10	Almonds, shelled.....	8-10 nuts
4	Peanut butter.....	$\frac{3}{4}$ teaspoon
4	Peanuts, roasted.....	4 nuts
<i>Vegetables</i>		
44	Asparagus, fresh.....	$3\frac{1}{2}$ stalks
90	Beans, green string, fresh.....	$\frac{1}{2}$ cup, scant
23	Beans, Lima, dried.....	$1\frac{1}{2}$ tablespoons
23	Beans, soy, dried.....	$1\frac{1}{2}$ tablespoons
150	Cabbage, head.....	$1\frac{1}{2}$ cups cooked
100	Carrot.....	1 large
250	Lettuce, head.....	$\frac{5}{8}$ head
25	Peas, fresh.....	$\frac{1}{8}$ cup
40	Potato, white.....	$\frac{1}{2}$ very small
75	Spinach.....	$\frac{2}{3}$ cup
90	Tomato, fresh.....	1 small
100	Turnip.....	$\frac{1}{2}$ cup

* See p. 125, "Factors Affecting Nutritive Values."

TABLE 51
ASCORBIC ACID EXCHANGES*

Approximately 50 milligrams. Various foods equivalent in ascorbic acid to one small orange

Grams	Food	Household Measure
<i>Fruits</i>		
1000	Apples.....	10 small
500	Bananas.....	5 medium
150	Cantaloupe.....	$\frac{1}{2}$ medium
125	Grapefruit, fresh.....	$\frac{1}{2}$ medium
160	Grapefruit juice (C).....	$\frac{2}{3}$ cup
100	Lemon juice.....	$\frac{1}{2}$ cup, scant
100	Orange.....	1 small
100	Orange juice.....	$\frac{1}{2}$ cup, scant
120	Orange and grapefruit juice (C).....	$\frac{1}{2}$ cup
600	Peaches, yellow.....	6 medium
200	Pineapple, fresh.....	2 slices, $\frac{3}{4}$ " thick
600	Pineapple juice (C).....	3 cups, scant
80	Strawberries.....	8 large
200	Tangerines.....	4 small
<i>Meat, Uncooked*</i>		
90	Liver, beef.....	3 ounces
90	Liver, chicken.....	3 ounces
90	Liver, pork.....	3 ounces
<i>Vegetables, Raw</i>		
100	Cabbage, head.....	$\frac{3}{4}$ -1 cup
500	Lettuce, head.....	1 $\frac{1}{4}$ heads
50	Pepper, green.....	$\frac{1}{2}$ large
500	Potatoes, white.....	5 small
200	Radishes.....	20
100	Spinach.....	$\frac{1}{2}$ cup
200	Tomatoes, fresh.....	2 medium
250	Tomato juice and tomatoes (C).....	1 $\frac{1}{2}$ cups, scant
100	Watercress.....	1 small bunch

* See p. 125, "Factors Affecting Nutritive Values."

TABLE 52
ACID ASH-FORMING FOODSAVERAGE SERVINGS OF SOME COMMON FOODS ARRANGED ACCORDING TO THEIR
EXCESS OF ACID ASH*

Grams	Food	Household Measure	Excess Acidity in cubic centi- meters Normal Acid—HCl
<i>Breads</i>			
30	Bread, graham.....	1 sl.	2.0
30	Bread, rye, dark.....	1 sl.	2.4
30	Bread, rye, light.....	1 sl.	2.3
30	Bread, white.....	1 sl.	1.7
30	Bread, whole wheat.....	1 sl.	2.3
<i>Cereals</i>			
30	Barley, pearl, dry.....	2 T.	1.0
30	Cornflakes.....	1 c.	1.1
30	Oatmeal, dry.....	5 T.	4.8
30	Rice, brown.....	2 T.	1.7
30	Rice, polished.....	3 T.	2.8
30	Shredded wheat.....	1 b.	3.3
30	Whole wheat.....	3 T.	3.3
<i>Crackers</i>			
10	Graham.....	1	1.1
4	Saltines.....	1	0.3
6	Soda crackers.....	1	0.5
<i>Dairy Products</i>			
30	Cheese, American (cheddar).....	1 p. (1" x 1½" x 1")	1.1
30	Egg, white.....	1 white	1.9
50	Egg, whole.....	1	5.5
18	Egg, yolk.....	1 yolk	4.0
<i>Fish</i>			
30	Codfish (salt).....	1 oz.	3.8
90	Haddock.....	3 oz.	5.9
90	Halibut.....	3 oz.	8.4
90	Herring, smoked.....	3 oz.	10.2
90	Mackerel.....	3 oz.	9.9
30	Oysters.....	2 m.	3.3
90	Salmon (C).....	3 oz.	9.2
90	Salmon, fresh.....	3 oz.	9.5
30	Sardines.....	3 m.	2.5
30	Smelts.....	1 oz. or 2 fishes	2.6

TABLE 52—Concluded

Grams	Food	Household Measure	Excess Acidity in cubic centi- meters Normal Acid—HCl
<i>Flour and Flour Products</i>			
8	Flour, white.....	1 T.	0.8
30	Macaroni.....	4 T. ($\frac{3}{4}$ c. ck.)	3.2
30	Spaghetti.....	4 T. ($\frac{3}{4}$ c. ck.)	3.2
<i>Fruits</i>			
100	Cranberries.....	$\frac{2}{3}$ -1 c.	**
100	Plums.....	3 ($1\frac{1}{2}$ " d.)	**
50	Prunes.....	5 sm.	**
<i>Meat</i>			
30	Bacon, ck. crisp.....	3 strips, 5" long	1.8
90	Beef, round.....	3 oz.	10.8
90	Chicken.....	3 oz.	9.6
90	Ham, boiled.....	3 sl.	10.2
90	Lamb, leg.....	3 oz.	6.0
90	Liver.....	3 oz.	9.5
90	Pork, tenderloin.....	3 oz.	6.5
90	Pork chop.....	1 chop ($\frac{1}{2}$ " thick)	10.5
90	Veal.....	3 oz.	8.1
<i>Miscellaneous</i>			
75	Cake, plain.....	2 $\frac{1}{2}$ " sq.	2.9
20	Cookies, sugar.....	1 m. (3" d.)	0.9
50	Doughnut.....	1	2.4
15	Mayonnaise.....	1 T.	0.2
15	Peanut butter.....	1 sc. T.	0.9
30	Peanuts.....	32-34 nuts	1.8
30	Walnuts, English.....	16-30 H.	2.2
<i>Vegetables</i>			
100	Corn, sweet.....	1 m. ear	2.0
30	Lentils.....	$\frac{1}{2}$ c. ck.	5.2

* Bowes and Church, "Food Values of Portions Commonly Used," May 1948.

** These fruits contain "relatively large quantities of hippuric acid, which instead of being oxidized completely in the body, is converted into hippuric acid which appears in the urine," and therefore generally increase urinary acidity. Sherman, Henry C., *Chemistry of Food and Nutrition*, p. 251, Macmillan Co., 1946.

TABLE 53
ALKALINE ASH-FORMING FOODSAVERAGE SERVINGS OF SOME COMMON FOODS ARRANGED ACCORDING TO THEIR
EXCESS OF ALKALINE ASH*

Grams	Food	Household Measure	Excess Alkalinity in cubic centimeters Normal Alkali—NaOH
<i>Dairy Products</i>			
240	Buttermilk.....	1 c.	5.2
30	Milk, evaporated.....	2 T.	1.4
240	Milk, skim.....	1 c.	4.3
240	Milk, whole.....	1 c.	5.0
<i>Fruits</i>			
100	Apple.....	1 sm.	3.8
100	Applesauce.....	$\frac{1}{2}$ c.	2.4
30	Apricots, dried.....	4-6 H.	9.7
100	Apricots, fresh.....	2-3 m.	6.3
100	Banana.....	1 m.	8.9
100	Cantaloupe.....	$\frac{1}{3}$ melon	7.5
100	Cherries.....	25 sm.	6.2
30	Dates.....	3-4 stoned	2.9
30	Figs, dried.....	2 sm.	29.6
100	Grapefruit.....	$\frac{1}{2}$ sm.	4.2
100	Grapes, Malaga or Tokay.....	22 av.	3.5
100	Lemon juice.....	$\frac{1}{2}$ c. sc.	3.6
100	Muskmelon.....	$\frac{1}{3}$ melon	7.5
100	Orange.....	1 sm.	5.9
100	Orange juice.....	$\frac{1}{2}$ c. sc.	4.8
100	Peach.....	1 L.	5.6
100	Pear.....	1 m.	3.2
100	Pineapple.....	1 sl. ($\frac{3}{4}$ " thick)	6.8
30	Raisins.....	$\frac{1}{4}$ c. seeded	6.3
100	Rhubarb.....	1 c.	8.5
100	Tangerine.....	1 L.	5.5
100	Watermelon.....	$\frac{1}{2}$ thin slice	3.8
<i>Miscellaneous</i>			
30	Coconut.....	1 oz.	0.9
100	Grape juice.....	$\frac{1}{2}$ c. sc.	3.9
100	Ice cream** vanilla and chocolate.....	2 hp. T.	0.6
20	Molasses.....	1 T.	12.0
135	Pie, apple.....	$\frac{1}{8}$ pie (9" d.)	0.2
<i>Nuts</i>			
15	Almonds.....	12-15 nuts	1.9

* Bowes and Church, "Food Values of Portions Commonly Used," May 1948.

** Ice creams with fruit will contain higher amounts of alkali.

TABLE 53—*Concluded*

Grams	Food	Household Measure	Excess Alkalinity in cubic centimeters Normal Alkali—NaOH
	<i>Vegetables</i>		
100	Asparagus.....	12 st. 4" long	1.0
100	Beans, baked.....	3 r. T.	5.0
30	Beans, Lima, dried.....	$\frac{1}{2}$ c. ek.	12.5
100	Beans, Lima, fresh.....	$\frac{1}{2}$ c.	14.0
100	Beans, string.....	$\frac{1}{2}$ c.	5.5
100	Beans, string (C).....	$\frac{1}{2}$ c.	4.7
100	Beet greens.....	$\frac{1}{2}$ c. ek.	27.0
100	Beets.....	2 m.	10.0
100	Brussels sprouts.....	10-11 av.	4.3
100	Cabbage, head.....	$\frac{3}{4}$ -1 c. ek.	4.4
100	Carrot.....	1 L.	13.5
100	Cauliflower.....	$\frac{3}{4}$ c. ek.	5.3
100	Celery.....	4 st.	8.6
100	Cucumber.....	1 m.	1.6
100	Endive or chicory.....	20 L. lvs.	11.2
100	Lettuce.....	$\frac{1}{4}$ head or 10 lvs.	9.0
100	Mushrooms.....	4 L.	4.0
100	Onions.....	2-3 sm.	0.5
100	Parsnip.....	$\frac{1}{2}$ L.	12.0
30	Peas, dried.....	$\frac{1}{2}$ c. ek.	2.1
100	Peas, fresh.....	$\frac{3}{4}$ c.	1.0
100	Potato, sweet.....	1 sm.	6.0
100	Potato, white.....	1 sm.	9.0
100	Pumpkin (C).....	$\frac{1}{2}$ c. ek. se.	2.9
100	Radishes.....	10	5.0
100	Sauerkraut (C).....	$\frac{1}{2}$ c.	5.6
100	Spinach.....	$\frac{2}{3}$ c. ek.	20.0
100	Squash, Hubbard.....	$\frac{1}{2}$ c. ek.	2.6
100	Tomato.....	1 m.	5.3
100	Turnip (rutabaga).....	$\frac{1}{2}$ c. ek.	8.6

TABLE 54

AVERAGE SERVINGS* OF SOME COMMON FOODS ARRANGED ACCORDING TO
THEIR EXCESS OF ACID OR ALKALINE ASH IN TERMS OF
NORMAL SOLUTION**

Grams	Food	Acid	Alkaline	Grams	Food	Acid	Alkaline
More than 10 Grams				8.9 to 8.0 Grams—Continued			
	<i>Fruits</i>				<i>Meat, Fish and Poultry</i>		
30	Figs, dried.....		29.6	90	Halibut.....	8.4	
100	Figs, fresh.....		29.0	90	Veal.....	8.1	
	<i>Meat, Fish and Poultry</i>				<i>Vegetables</i>		
90	Beef, hamburger.....	11.7		100	Celery.....		8.6
90	Beef, round.....	10.8		100	Turnips (rutabaga).....		8.6
90	Ham, boiled.....	10.2		7.9 to 7.0 Grams			
90	Ham, smoked.....	11.1			<i>Fruits</i>		
90	Herring, smoked.....	10.2		100	Cantaloupe or musk-melon.....		7.5
90	Pork chop.....	10.5			<i>Vegetables</i>		
	<i>Miscellaneous</i>			100	Kale.....		7.6
20	Molasses.....		12.0	100	Leeks.....		7.0
	<i>Vegetables</i>			6.9 to 6.0 Grams			
30	Beans, Lima, dried.....		12.5		<i>Fruits</i>		
100	Beans, Lima, fresh.....		14.0	100	Apriots, fresh.....		6.3
100	Beet greens.....		27.0	100	Blackberries, fresh.....		6.8
100	Carrots.....		13.5	100	Cherries.....		6.2
100	Chard, Swiss.....		13.5	100	Loganberries.....		6.6
100	Dandelion greens.....		19.5	100	Nectarines.....		6.0
100	Endive or chicory.....		11.2	100	Persimmons.....		6.0
100	Parsnips.....		12.0	100	Pineapple, fresh.....		6.8
100	Spinach (C).....		22.4	30	Raisins.....		6.3
100	Spinach, fresh.....		20.0	100	Raspberries.....		6.7
10.0 to 9.0 Grams				100	Strawberries.....		6.6
	<i>Fruits</i>				<i>Meat, Fish and Poultry</i>		
30	Apricots, dried.....		9.7	90	Lamb, leg.....	6.0	
	<i>Meat, Fish and Poultry</i>			90	Pork, tenderloin.....	6.5	
90	Chicken.....	9.6			<i>Vegetables</i>		
90	Liver.....	9.5		100	Potato, sweet.....		6.0
90	Mackerel.....	9.9		5.9 to 5.0 Grams			
90	Salmon (C).....	9.2			<i>Dairy Products</i>		
90	Salmon, fresh.....	9.5		240	Buttermilk.....		5.2
90	Turkey.....	9.5		50	Egg, whole.....	5.5	
	<i>Vegetables</i>			240	Milk, chocolate.....		5.3
100	Beets, fresh.....		10.0	240	Milk, whole.....		5.0
100	Lettuce, green leaf.....		9.0		<i>Fruits</i>		
100	Potato, white.....		9.0	100	Fruit cocktail (C).....		5.5
8.9 to 8.0 Grams							
	<i>Fruits</i>						
100	Banana.....		8.9				
100	Rhubarb.....		8.5				

TABLE 54—Continued

Grams	Food	Acid	Alkaline	Grams	Food	Acid	Alkaline
5.9 to 5.0 Grams—Continued				4.9 to 4.0 Grams—Continued			
	<i>Fruits (cont'd)</i>				<i>Vegetables</i>		
100	Lemon.....		5.3	100	Beans, snap or string (C).....		4.7
100	Lime.....		5.3	100	Brussel sprouts.....		4.3
100	Orange.....		5.9	100	Cabbage, head.....		4.4
100	Orange & grapefruit juice (C).....		5.3	100	Eggplant.....		4.5
100	Peach.....		5.6	100	Lettuce, head.....		4.0
100	Tangerines.....		5.5	100	Mushrooms.....		4.0
	<i>Meat, Fish and Poultry</i>			3.9 to 3.0 Grams			
90	Beef, tongue.....	5.5			<i>Breads</i>		
90	Haddock.....	5.9		35	Bread, Boston brown...		3.2
	<i>Miscellaneous</i>				<i>Cereals</i>		
10	Olives, green.....		5.4	30	Grape-nuts.....	3.4	
	<i>Vegetables</i>			30	Grape-nut Flakes.....	3.4	
100	Beans, baked (C).....		5.0	30	Ralston, dry.....	3.3	
30	Beans, navy, pea, kidney, (dry).....		5.3	30	Shredded wheat.....	3.3	
100	Beans, snap or string...		5.5	30	Wheatena.....	3.3	
100	Broccoli.....		5.2	30	Whole wheat.....	3.3	
100	Cauliflower.....		5.3		<i>Flour and Flour Products</i>		
30	Lentils.....		5.2	30	Macaroni.....	3.2	
100	Okra.....		5.2	30	Spaghetti.....	3.2	
100	Radishes.....		5.0		<i>Fruits</i>		
100	Sauerkraut (C).....		5.6	100	Apple.....		3.8
100	Tomatoes (C) and fresh		5.3	100	Apricots (C).....		3.7
100	Tomato juice.....		5.3	100	Gooseberries.....		3.3
				100	Grapefruit juice (C) and fresh.....		3.2
4.9 to 4.0 Grams				100	Grapes, American.....		3.1
	<i>Cereals</i>			100	Grapes, green seedless..		3.5
30	Oats, dry.....	4.8		100	Grapes, Malaga or Tokay.....		3.5
	<i>Dairy Products</i>			100	Lemon juice.....		3.6
18	Egg, yolk.....	4.0		100	Pears.....		3.2
180	Milk, chocolate.....		4.0	100	Pineapple juice.....		3.8
240	Milk, skim.....		4.3	100	Watermelon.....		3.8
	<i>Fruits</i>				<i>Meat, Fish and Poultry</i>		
100	Blackberries (C).....		4.8	30	Codfish, salt.....	3.8	
100	Cherries (C).....		4.7	30	Oysters.....	3.3	
100	Grapefruit (C) and fresh.....		4.2		<i>Miscellaneous</i>		
100	Loganberries (C).....		4.6	87	Cake, plain, iced.....	3.0	
100	Oranges, fresh.....		4.8	50	Cake, sponge.....	3.3	
100	Peaches (C).....		4.7	100	Grapejuice.....		3.9
100	Raspberries (C).....		4.0	150	Ice cream, peach.....		3.0
	<i>Miscellaneous</i>			150	Ice cream, strawberry..		3.3
—	Pie, custard.....	4.0		—	Pie, lemon meringue....	3.5	
240	Sauce, white, thin.....		4.0	—	Pie, mince.....	3.4	
150	Shortcake, biscuit, raspberry.....		4.8	—	Pie, peach.....		3.7
175	Shortcake, biscuit, strawberry.....		4.7	15	Potato chips.....		3.7
				260	Sauce, white, medium..		3.0
				153	Shortcake, biscuit, peach.....		3.7

TABLE 54—Continued

Grams	Food	Acid	Alkaline	Grams	Food	Acid	Alkaline
3.9 to 3.0 Grams—Continued				1.9 to 1.0 Grams—Continued			
<i>Nuts</i>				<i>Cereals</i>			
30	Almonds.....		3.8	30	Corn flakes	1.1	
2.9 to 2.0 Grams				30	Hominy or grits, dry....	1.1	
<i>Breads</i>				30	Rice, brown.....	1.7	
30	Bread, cracked wheat...	2.0		<i>Crackers</i>			
30	Bread, graham.....	2.0		10	Crackers, graham.....	1.1	
30	Bread, rye, dark.....	2.4		20	Crackers, pilot.....	1.7	
30	Bread, rye, light.....	2.3		20	Pretzels, medium.....	1.4	
30	Bread, whole wheat....	2.3		<i>Dairy Products</i>			
45	Muffin, cornmeal....	2.4		30	Cheese, American		
40	Muffin, white.....	2.2			(cheddar).....	1.1	
40	Muffin, whole wheat...	2.3		30	Egg, white.....	1.9	
35	Roll, white, hard.....	2.6		30	Milk, evaporated.....		1.4
35	Roll, whole wheat.....	2.7		<i>Fruits</i>			
<i>Cereals</i>				100	Blueberries (C).....		1.6
30	Cornmeal.....	2.1		—	Cranberries.....	***	
30	Kix.....	2.2		100	Currants, fresh.....		1.2
30	Post Toasties, rice....	2.5		100	Pears (C).....		1.5
30	Rice, polished.....	2.8		—	Plums.....	***	
<i>Fruits</i>				—	Prunes.....	***	
100	Applesauce.....		2.4	<i>Meat, Fish and Poultry</i>			
100	Blueberries, fresh.....		2.7	30	Bacon, ck. crisp.....	1.8	
30	Dates, dried.....		2.9	100	Beef, corned, hash (C)..		1.5
100	Pineapple (C).....		2.9	60	Codfish cake.....	1.3	
<i>Meat, Fish and Poultry</i>				<i>Miscellaneous</i>			
30	Beef, corned.....	2.6		30	Brownies.....	1.2	
30	Sardines (C).....	2.5		30	Chocolate, bitter.....		1.6
30	Shrimps.....	2.2		110	Eclair.....	1.5	
30	Smelts.....	2.6		237	Eggnog, all milk.....	1.8	
<i>Miscellaneous</i>				15	Cookies, molasses.....		1.1
75	Cake, plain.....	2.9		—	Pie, blueberry.....		1.4
28	Cruller, sugared.....	2.4		—	Pie, custard, cocoanut..	1.3	
50	Doughnut.....	2.4		—	Pie, strawberry.....		1.4
60	Waffles.....	2.8		<i>Nuts</i>			
<i>Nuts</i>				30	Cocoanut.....		1.2
15	Brazil nuts.....		2.1	30	Peanut butter.....	1.8	
30	Pecans.....	2.2		30	Peanuts.....	1.8	
30	Walnuts, English.....	2.2		<i>Vegetables</i>			
<i>Vegetables</i>				100	Asparagus, fresh.....		1.0
100	Corn, all.....	2.0		100	Peas, fresh.....		1.0
100	Mushrooms (C).....		2.0	100	Peppers, green or red...		1.7
30	Peas, dried.....		2.1	100	Squash, summer.....		1.1
100	Pumpkin.....		2.9	10	Watercress.....		1.8
100	Squash, winter.....		2.6	Less Than 1.0 Gram			
1.9 to 1.0 Grams				<i>Breads</i>			
<i>Breads</i>				5	Melba toast	0.6	
25	Bread, gluten.....	1.9		<i>Crackers</i>			
25	Bread, raisin.....	1.3		5	Arrowroot biscuit.....	0.4	
30	Bread, white, enriched..	1.7		5	Cracker, butter.....	0.4	
				5	Cracker, cheese.....	0.4	

TABLE 54—*Concluded*

Grams	Food	Acid	Alkaline	Grams	Food	Acid	Alkaline
Less than 1.0 Gram— <i>Continued</i>				Less than 1.0 Gram— <i>Concluded</i>			
<i>Crackers—Continued</i>				<i>Neutral Foods</i>			
3	Cracker, Ritz.....	0.3		100	Butter		
4	Cracker, saltines.....	0.3		100	Cream, light		
6	Cracker, soda.....	0.5		100	Cream, heavy		
5	Cracker, whole wheat...	0.7			Fats, Crisco, etc.		
15	Holland Rusk.....	0.5			Gingerale		
7	Ry-Krisp.....	0.5			Lard		
8	Zwieback.....	0.7			Margarine		
<i>Miscellaneous</i>					Oils		
30	Chocolate sauce.....		0.2		Sugar		
30	Fudge, chocolate.....		0.3				
30	Chocolate, sweet.....		0.7				
25	Peanut brittle.....	0.6					
—	Pie, apple.....		0.2				
—	Pie, cherry.....		0.3				
160	Pudding, bread.....	0.5					
120	Pudding, tapioca.....	0.2					
<i>Vegetables</i>							
	Asparagus (C).....		0.8				
	Onions.....		0.5				
	Peas (C).....		0.9				

* Cf. Table of Food Values and Measures (Table 22) for amounts of average servings.
** Bowes and Church, "Food Values of Portions Commonly Used," May 1948.
*** These fruits usually increase urinary acidity.

TABLE 55
PURINE BEARING FOODS*
100 GRAM SERVINGS OF SOME COMMON FOODS ARRANGED ACCORDING TO THEIR
CONTENT OF PURINE BODIES**, ***

Food		Food	
1,000-150 Milligrams		150-75 Milligrams—Continued	
<i>Fish</i>	<i>Milligrams</i>	<i>Soup</i>	
Anchovies.....	363	Soup, chicken	Soup, meat
Sardines, in oil.....	295	<i>Vegetables</i>	
<i>Meat</i>		Lentils	
Brains.....	195	Less Than 75 Milligrams	
Kidney, beef.....	200	<i>Bread, Cereals and Crackers</i>	
Liver, beef.....	233	Breads, whole grain	
Liver, calf.....	233	Cereals, whole grain	
Meat extracts.....	160-400	Crackers, whole grain	
Sweetbreads.....	825	<i>Fish</i>	
<i>Miscellaneous</i>		Bluefish	Oysters
Gravies.....	variable	Crab	Salmon
150-75 Milligrams		Eel	Shad
<i>Fish</i>		Finnan haddie	Tuna
Carp	Pike	Herring	Whitefish
Codfish	Plaice	Lobster	
Halibut	Shellfish		
Perch	Trout	<i>Meat</i>	
<i>Meat</i>		Ham	Tripe
Bacon	Sheep	Mutton	
Beef	Tongue, calf	<i>Poultry</i>	
Liver sausage	Veal	Chicken	
Pork	Venison	<i>Soup</i>	
Rabbit		Bouillon	
<i>Poultry</i>		<i>Vegetables</i>	
Duck	Pigeon	Asparagus	Cauliflower
Goose	Quail	Beans, kidney	Mushrooms
Partridge	Squab	Beans, Lima	Peas
Pheasant	Turkey	Beans, navy	Spinach

* Hench, Philip S., *J.A.M.A.*, 116: 453, 1941.
** To calculate the purine or "purine bodies" in a given food, the amount of purine nitrogen contained in the food is multiplied by three.
*** Normal diets contain 600-1000 mg. of purines daily; a low purine diet contains 100-150 mg. daily. This can be attained roughly by taking one "75-150 mg." food in a week, one "less than 75 mg." food, four days a week, and any desired food from the list with little or no purine.

TABLE 55—*Concluded*

Food		Food	
Little or No Purine		Little or No Purine— <i>Continued</i>	
<i>Beverages</i>		<i>Miscellaneous</i>	
Carbonated	Fruit juices	Gelatin	Peanut butter
Chocolate	Postum		<i>Nuts</i>
Cocoa	Tea	All kinds	
Coffee			<i>Soups</i>
<i>Breads, Cereals and Crackers</i>		Cream soup, made with allowed vegetables and without meat stock.	
Bread, French	Holland rusk	Vegetable soup, made with allowed vegetables and without meat stock.	
Bread, gluten	Post toasties		<i>Sweets</i>
Bread, white	Puffed rice	All kinds	
Butter thins	Rice	Pies (except mince-meat)	
Corn flakes	Rice flakes	Sugars	
Cornmeal, white	Rice krispies		<i>Vegetables</i>
Cornmeal, yellow	Soda crackers	Artichokes	Kohlrabi
Corn sticks	Unceda biscuits	Beans, string	Lettuce
Cream of wheat	Water rolls	Beets	Okra
Farina	Zwieback	Beet greens	Parsnips
Grits		Broccoli	Potato, white and sweet
<i>Dairy Products</i>		Brussel sprouts	Pumpkin
Butter	Milk, buttermilk	Cabbage	Rutabaga
Cheese, all kinds	Milk, condensed	Carrots	Sauerkraut
Eggs	Milk, malted	Celery	Squash, summer
		Corn	Swiss chard
<i>Fats</i>		Cucumber	Tomato
All kinds (eat in moderation)		Dandelion greens	Turnips
<i>Fish</i>		Eggplant	
Caviar	Shad roe	Endive	
<i>Flour and Cereal Products</i>			<i>Vitamin Concentrates</i>
Arrowroot	Sago	Cod liver oil	
Hominy	Spaghetti	Halibut oil	
Macaroni	Tapioca	Yeast	
Noodles	Vermicelli		
<i>Fruits</i>			
All kinds			

TABLE 56
CHOLESTEROL*

AVERAGE SERVINGS** OF FOODS OF ANIMAL ORIGIN ARRANGED ACCORDING TO
THEIR CONTENT OF CHOLESTEROL

Grams	Food	Choles- terol	Grams	Food	Choles- terol
More Than 0.5 Gram			0.090 to 0.010 Gram		
90	Brain, beef	2.124	90	Beef, lean	0.085
90	Liver, lamb	0.549	15	Butter	0.042
0.490 to 0.100 Gram			30	Cheese, American	0.048
90	Beef, med. fat	0.113	30	Cheese, American, processed	0.047
90	Crab	0.131	30	Cheese, Swiss, processed	0.044
50	Egg, whole	0.234	30	Cheese, Velveeta	0.048
18	Egg, yolk	0.360	30	Cheese, Limburger, processed	0.041
90	Heart, beef	0.135	30	Cheese, pimento cream, proc- essed	0.042
90	Kidney	0.369	90	Chicken, dark	0.045
90	Liver, beef	0.288	90	Chicken, light	0.081
90	Liver, calf	0.324	90	Codfish	0.045
90	Liver, pork	0.378	90	Duck	0.063
90	Oysters	0.207	90	Lamb	0.063
90	Sweetbread	0.252	90	Pork	0.054
90	Tripe	0.135	90	Salmon	0.054
90	Veal, shank	0.126	60	Shrimp	0.090
			90	Veal, breast	0.090

Adapted from the table by Ruth Okey, J.A.D.A., Vol. 21, No. 6, p. 342, June, 1945.

* "Cholesterol is found only in products of animal origin. Published figures for "cholesterol content" of foods of vegetable origin represent not content of cholesterol itself, but content of other sterols." Sterols contributed by vegetable food need not be considered when computing cholesterol content of a diet, since mammals absorb plant sterols with great difficulty or not at all.

** Cf. Table of Food Values and Measures (Table 22) for amounts of average servings.

TABLE 57
NORMAL RANGE FOR CERTAIN PHYSIOLOGICAL DATA

Blood:

Hemoglobin:	
Children.....	12-15 grams per 100 cc.
Adults: Male.....	14-17 grams per 100 cc.
Female.....	12-16 grams per 100 cc.
Red cell count:	
Children.....	4,000,000-4,500,000 per c.mm.
Adults: Male.....	4,500,000-5,400,000 per c.mm.
Female.....	4,000,000-4,800,000 per c.mm.
White cell count:	
Children.....	7,000-15,000 per c.mm.
Adults.....	5,000-10,000 per c.mm.
Non-protein nitrogen.....	25-40 mgm. per 100 cc.
Uric acid.....	2.0-3.5 mgm. per 100 cc.
Urea nitrogen.....	10-15 mgm. per 100 cc.
Sugar.....	80-120 mgm. per 100 cc.
Cholesterol.....	150-240 mgm. per 100 cc.
Calcium.....	9-11 mgm. per 100 cc.
Sodium.....	137-143 meg. per liter
Chloride.....	97-105 meg. per liter
Bilirubin.....	less than 1.0 mgm. %
Sedimentation rate (Westergren method):	
Male.....	up to 10 mm. in 1 hour
Female.....	up to 15 mm. in 1 hour
Creatinine.....	1-2 mgm. per 100 cc.
Phosphorus:	
Children.....	3-7 mgm. per 100 cc.
Adults.....	3-4.5 mgm. per 100 cc.
Alkaline phosphatase:	
Children.....	5-12 Bodansky units
Adults.....	1.5-4 Bodansky units
Acid phosphatase.....	less than 4 King-Armstrong units
Ascorbic acid:	
Children.....	1.5 mgm. per 100 cc.
Adults.....	0.8-2.4 mgm. per 100 cc.
Albumin.....	3.5-4.5 Gms. %
Globulin.....	2.5-3.0 Gms. %
Total protein.....	6.0-7.5 Gms. %

Urine:

Volume.....	1000-2000 cc. in 24 hours
Specific gravity.....	1010-1032
Color.....	Amber
Reaction.....	Acid to litmus
Sugar.....	0-trace
Albumin.....	0-trace
Diacetic acid.....	0
Sediment:	
Casts.....	0
Red blood corpuscles.....	None to a rare red cell
White blood corpuscles.....	None to an occasional white cell
Squamous cells.....	More in females
Acetone.....	0
Phenolsulphonephthalein excretion.....	25% in 15 minutes, 40-60% in one hour (intravenously)

Gastric acidity..... 0.4-0.5% hydrochloric acid

Blood pressure:

Children.....	90-110 60-70
Adults.....	100-150 70-90

Basal Metabolic Rate..... Minus 15—plus 10

TABLE 58

BIOLOGIC FOOD GROUPS* USED IN THE TREATMENT OF FOOD ALLERGY

GRAMINEAE Wheat Rice Rye Oat Barley Corn Sorghum	POMACEAE Apple Pear	ACERACEAE Maple Sugar
PALMACEAE Cocoanut Date	DRUPACEAE Almond Plum Prune Cherry Apriicot Peach	STERCULIACEAE Cocoa
LILIACEAE Onion English Garlic Asparagus Leek Chive	LEGUMINOSAE Pea Kidney Bean Lima Bean Lentil Peanut Navy Bean String Bean	THEACEAE Tea
MORACEAE Black Mulberry Fig Hops	RUTACEAE Lemon Orange Grapefruit Tangerine	RUBIACEAE Coffee
POLYGONACEAE Buckwheat Rhubarb	MALVACEAE Cottonseed Okra, Gumbo	MUSACEAE Banana
JUGLANDACEAE Black Walnut English Walnut Pecan Hickory Butternut	UMBELLIFERAE Carrot Parsnip Parsley Celery Dill	VITACEAE Grape-Raisin
BETULACEAE Hazelnut Filbert Chestnut	VACCINIACEAE Huckleberry Cranberry Blueberry	ANACARDIACEAE Pistaehio Nut
CHENOPODIACEAE Spinach Beet Swiss Chard	SOLANACEAE Potato Tomato Eggplant Green Pepper Red Pepper Ground Cherry	OLEACEAE Olive
GROSSULARIACEAE Currant Gooseberry	CUCURBITACEAE Pumpkin Squash Cantaloup Cucumber Watermelon Muskmelon	CONVOLVULACEAE Sweet Potato Yam
CRUCIFERAE Radish Horse Radish Mustard Turnip Rutabago Cabbage Kale Brussels Sprouts Kohl-rabi Cauliflower Broccoli	COMPOSITAE (Chichoriaceae) Salsify, Oyster Plant Chicory Lettuce Endive	BROMELIACEAE Pineapple
ROSACEAE Blackberry Strawberry Raspberry	COMPOSITAE (Asteraceae) Jerusalem Artichoke Artichoke	ZINZIBERACEAE Ginger
		UNGULATAE Beef Lamb Mutton Pork Veal
		AVES Chicken Duck Goose Squab Turkey
		PISCES Bass Crappie Pike Whitcfish Herring Halibut Haddock Salmon
		CRUSTACEAE Lobster Crab Shrimp Crayfish
		MOLLUSCA Clam Oyster Scallop Abalone

*Adapted from an arrangement by M. Murray Peshkin, M.D., New York, N. Y.

TABLE 59

ELIMINATION DIETS FOR THE DIAGNOSIS AND TREATMENT OF FOOD ALLERGY*—VANDERBILT CLINIC DIETS

	Adults				Children			
	Diet 1	Diet 2	Diet 3	Diet 4	Diet 5 For Infants	Diet 6 Children 1-2 Years	Diet 7 School Child	Diet 8 School Child
Beverage	Coffee	Milk Chocolate ^d	Tea Lemonade	Grape juice	Sobee ^o	Sobee Lemonade	Sobee	Lemonade
Fruit	Grapefruit Prunes Plums	Apple Apricots	Peaches Banana Lemon	Grapes Raisins Pears	Grapefruit juice Lemon juice	Lemon juice Banana	Apricots Banana	Apple Lemon
Vegetable	Peas (any kind) Corn (any kind)	Beets Lettuce	Onion Carrots Lentils	Beans (any kind) Turnips (yellow or white)	Carrot String beans	Carrot String beans	Carrot Beans (all kinds)	Corn Beets Peas
Meats	Lamb Mutton	Beef Veal	Mackerel Salmon	Chicken Egg	Lamb	Lamb	Lamb	Beef
Cereal	Corn ^a Hominy	Rice ^e Rye	Wheat ^b	Barley Oatmeal Steel-cut oats	Barley Oatmeal	Barley Oatmeal	Barley Oatmeal	Corn Rice
Bread	Corn pone Corn crisps	Rye-rice muffin Whole rye wafer ^f	Homemade biscuit Whole wheat bread ^g Some wheat crackers ^h	Barley-oatmeal muffin	Barley-oatmeal muffin	Barley-oatmeal muffin	Barley-oatmeal muffin	Corn pone Corn crisps
Fat	Corn oil ^b	Beef suet Butter or cream	Cotton seed oil ^k	Olive oil Chicken fat	Olive oil	Olive oil	Olive oil	Corn oil ^b
Miscellaneous	Corn syrup ^c Plum jam Molasses Molasses candy	Vinegar Cheese Apple butter Chocolate fudge Plain milk-choco- late bars ^l Mineral oil	Spaghetti ⁱ Peach jam Lemon drops	Olives Grape jelly Peppermint or win- tergreen cream candy ⁿ	Corn syrup ^c Corn sugar Viosterol ^p	Viosterol ^p	Chocolate Apricot jam Chocolate candy (homemade)	Corn syrup ^c Molasses Apple butter

Water, cane sugar, brown sugar, powdered dextrose, salt, gelatin,^m baking soda, cream of tartar, hard candy,ⁿ may be used freely on all diets.

Diets, 5, 6, and 7 contain practically the same foods but are adapted for different ages. If the mother is unable to bake the prescribed bread substitutes, Ry-Krisps^l may be added.

^a Corn meal mush or Post Toasties. ^b Corn oil, Mazola, manufactured by the Corn Products Refining Co., is stated to contain only pure corn oil.

^c Corn syrup, Karo, Blue Label, manufactured by Corn Products Refining Co., is stated to be made from 85-90 per cent corn syrup and 10 per cent refiners' sugar.

^d Chocolate, this applies to a pure chocolate or cocoa and does not indicate chocolate preparations, such as the cocoa malt or chocolate malted milk preparations.

^e Rice, preferably brown or as Puffed Rice, Quaker Oats Co., or Rice Krispies, Kellogg's.

^f Ry-Krisps, whole-rye wafer stated to be made from whole rye, salt, and water. Manufactured by the Ralston Purina Co., St. Louis, Mo.

^g Plain Hershey milk chocolate bars are stated to be made from whole milk, chocolate, and sugar. Filled chocolate candy bars or chocolate creams may not be used as they usually contain egg and sometimes nuts or fruits.

^h Wholewheat bread as baked by the leading bakers in New York City is stated to be made without milk. It usually contains yeast and frequently lard which introduces additional foods.

Practically all New York white bread does contain milk. This may not apply in every community.

ⁱ Uneda Biscuits and Graham Crackers of the National Biscuit Co. are stated to be made without milk or eggs.

^j Cotton seed oil, i. e., Crisco, manufactured by Procter and Gamble. It may be salted and also used as a very good substitute for butter.

^k Spaghetti, this does not include macaroni and noodles as some brands of macaroni contain milk and all noodles contain egg.

^l Commercially prepared lemon flavored gelatin may be used on diets 3, 6, and 8, but on the other diets it is necessary to use unflavored gelatin as the allowed fruit flavors are not prepared commercially.

^m Hard candy applies to the commercial candy flavored with peppermint, wintergreen, clove, cinnamon, etc., but not to soft candies, such as marshmallows, fondants, creams or nougats because egg white is used in the making of these.

ⁿ Sobee, manufactured by Mead, Johnson & Co., contains soy bean 67.5 per cent, barley flour 9.5 per cent, olive oil 19 per cent, sodium chloride 1.3 per cent and calcium carbonate 2.7 per cent. If it is prepared by using 1 ounce of Sobee to 7 ounces of water, the nutritive value of one fluid ounce is approximately equivalent to 17 calories. The percentage composition in normal dilution is carbohydrate 4.67 per cent, protein 4.15 per cent and fat 2.81 per cent.

^p Viosterol, irradiated ergosterol usually with corn oil as a vehicle. If corn is contraindicated, suggest using Abbot's Viosterol which is irradiated ergosterol in sesame oil.

^q Waters, Irene, Reprint from The Journal of Allergy, St. Louis, Vol. 11, No. 4, p. 228, May, 1931.

TABLE 60

THE AMOUNTS OF CARBOHYDRATE, PROTEIN, FAT AND CALORIES FOR THE
VARIOUS GRAM RATIOS OF THE KETOGENIC DIET

Diet Calculation Table

Cals.	Gram Ratios															
	1:1		1.5:1		2:1		2.5:1		3:1		3.5:1		4:1			
	F:C-P		F:C-P		F:C-P		F:C-P		F:C-P		F:C-P		F:C-P			
1000	77	77	86	57	91	45	94	38	97	32	99	28	100	25		
	79	79	88	59	93	47	97	39	99	33	101	29	102	26		
	81	81	90	60	96	48	99	40	102	34	104	30	105	26		
	83	83	92	61	98	49	101	41	104	35	106	30	107	27		
1100	85	85	94	63	100	50	104	41	106	36	108	31	110	27		
	87	87	96	64	102	51	106	42	109	36	111	32	112	28		
	89	89	99	66	105	52	109	43	111	37	113	32	115	29		
	90	90	101	67	107	53	111	44	114	38	116	33	118	29		
1200	92	92	103	69	109	55	113	45	116	39	118	34	120	30		
	94	94	105	70	111	56	116	46	118	40	121	34	122	31		
	96	96	107	71	114	57	118	47	121	40	123	35	125	31		
	98	98	109	73	116	58	120	48	123	41	126	36	127	32		
1300	100	100	111	74	118	59	123	49	126	42	128	37	130	32		
	102	102	114	76	120	60	125	50	129	43	130	37	132	33		
	104	104	116	77	122	61	128	51	130	43	133	38	135	34		
	106	106	119	78	124	62	130	52	132	44	136	39	138	34		
1400	108	108	120	80	128	64	132	53	135	45	138	40	140	35		
	110	110	123	82	130	65	135	54	138	46	141	40	142	36		
	112	112	125	83	132	66	137	55	141	47	143	41	144	36		
	113	113	126	84	134	67	139	56	143	48	146	42	146	37		
1500	115	115	129	86	136	68	141	57	144	48	148	42	150	38		
	117	117	131	87	138	69	144	58	147	49	150	43	152	38		
	119	119	134	89	140	70	146	59	150	50	152	44	156	39		
	121	121	135	90	144	72	150	60	153	51	155	44	158	39		
1600	123	123	137	91	146	73	151	60	156	52	157	45	160	40		
	125	125	140	93	149	74	153	61	158	53	161	46	162	41		
	127	127	143	94	150	75	155	62	159	53	163	47	165	41		
	129	129	144	96	152	76	158	63	162	54	165	47	168	42		
1700	131	131	146	97	154	77	160	64	165	55	168	48	170	43		
	133	133	149	99	156	78	163	65	168	56	170	49	172	43		
	135	135	150	100	158	79	165	66	170	57	172	49	176	44		
	137	137	152	101	162	81	168	67	171	57	175	50	178	44		
1800	138	138	155	103	164	82	170	68	174	58	177	51	180	45		
	140	140	156	104	166	83	173	69	177	59	179	51	182	46		
	142	142	158	105	168	84	175	70	179	60	182	52	185	46		
	144	144	161	107	170	85	178	71	180	60	185	53	184	47		
1900	146	146	162	108	172	86	180	72	183	61	187	54	190	48		
	148	148	165	110	176	88	183	73	186	62	189	54	192	48		
	150	150	167	111	178	89	185	74	189	63	192	55	195	49		
	152	152	168	112	180	90	188	75	192	64	195	56	197	49		
2000	154	154	171	114	182	91	190	76	195	65	197	56	200	50		
	156	156	173	116	184	92	191	76	196	65	200	57	202	51		
	158	158	176	117	186	93	193	77	198	66	202	58	205	51		
	160	160	178	118	189	94	196	78	201	67	204	58	207	52		
2100	162	162	180	120	191	95	198	79	203	68	207	59	210	52		
	163	163	182	121	193	97	200	80	206	69	210	60	212	53		
	165	165	184	123	196	98	203	81	208	69	212	61	215	54		
	167	167	186	124	198	99	205	82	210	70	214	61	217	54		
2200	169	169	189	126	200	100	207	83	213	71	217	62	220	55		
	171	171	191	127	202	101	210	84	215	72	220	63	222	56		
	173	173	193	128	204	102	212	85	218	73	222	63	225	56		
	175	175	195	130	207	103	214	86	220	73	224	64	227	57		
2300	177	177	197	131	209	105	217	87	222	74	227	65	230	57		
	179	179	199	133	212	106	219	88	225	75	229	66	232	58		
	181	181	202	134	214	107	222	89	228	76	232	66	235	59		
	182	182	204	136	216	108	224	90	230	77	234	67	237	59		
2400	185	185	206	137	218	109	226	91	232	77	236	68	240	60		
	186	186	209	139	220	110	229	92	235	78	239	69	242	61		
	188	188	210	140	222	111	231	93	237	79	242	69	245	61		
	190	190	212	141	225	112	233	94	240	80	244	70	247	62		
2500	192	192	214	143	228	114	236	95	242	81	246	70	250	62		
2600	200	200	222	148	236	118	245	99	249	83	255	73	260	65		
2700	208	208	231	154	244	122	252	101	261	87	266	76	268	67		
2800	215	215	240	160	254	127	262	105	270	90	273	78	280	70		
2900	223	223	247	165	262	131	272	109	279	93	283	81	288	72		
3000	231	231	253	170	274	137	282	113	291	97	294	84	300	75		
3100	238	238	265	177	289	140	292	117	300	100	304	87	318	77		
3200	246	246	273	182	290	145	300	120	309	103	314	90	320	80		
3300	254	254	282	188	300	150	310	124	318	106	322	92	328	82		
3400	261	261	291	194	308	154	320	128	327	109	332	95	340	85		
3500	269	269	300	200	318	159	330	132	336	112	343	98	348	87		

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Note: The figures for Carbohydrate, Protein and Fat are given in grams. The protein is based on the individual's protein requirement— $\frac{1}{2}$ to 1 gram per kilogram of body weight. The number of calories required is located on the table and the desired ratio selected to furnish this number of calories. The amount of protein is then deducted from the figures given in the column marked C.P. The remainder represents the amount of carbohydrate which will be required to give the desired ratio.

TABLE 61
FOOD CONTENT OF DIETS MODIFIED ACCORDING TO CONSISTENCY

Clear Liquid	Full Liquid	Soft	Light
	All foods on clear liquid diet—plus	All foods on full liquid diet—plus	All foods on soft diet—plus
Beef juice	Cereal gruels	Bread—white	Breads
Broth—fat free	Cream	Milk toast	Cakes, plain
Cereal water	Egg beverages	Toasted	Cereals
Coffee (no milk or cream)	Egg lemonade	Butter	Cheese
Fruit ices	Eggnog	Cake	American
Fruit juices (clear)	Ice cream—no fruit or nuts	Angel	Cream
Gelatin desserts (clear)	Junket	Sponge	Cookies, plain
Ginger ale and other carbonated beverages	Milk	Cereals, cooked	Eggs—any way except fried
Postum	Milk beveragez	Refined	*Fish
Sanka	Chocolate	Whole grain	minced, baked or steamed
Sugar	Cocoa	Finely ground	Fruits
Tea	Malted milk	Strained	Mayonnaise
Toast water	Milkshakes	Cheese, cottage	Meats (except beef, mutton, pork and veal)
Water	Sherbets	Crackers, white	Bacon
	Soft custards	Eggs, soft cooked	Brains
	Soups—strained	Fruits (free from skin and seed)	*Chicken (tender)
	Cream	Pulp,	minced, stewed, roasted
	Vegetable	Grapefruit	Lamb chops
	Vegetable juices	Orange	Poultry
		Soft cooked (baked or canned, as)	*Scraped beef
		Apples	*Sweet breads
		Apricots	Olives
		Bananas	*Oysters
		Peaches	Soups
		Pears	Vegetables (cooked and raw)
		Prunes	Except the cabbage family, corn, dried beans, cucumbers, onions, radishes and turnips
		Fruit jellies	
		Fruit whips	
		Jellies	
		Macaroni	
		Noodles	
		Potato—baked, creamed, mashed	
		Puddings (no nuts or raisins)	
		Bread	
		Cornstarch	
		Custard	
		Tapioca	
		Rice	
		Spaghetti	
		Vegetables, puréed,	
		Asparagus	
		Beans, string	
		Carrots	
		Peas	
		Spinach	
		Squash	
		Tomatoes	

* Permitted by some physicians on the soft diet.

TABLE 62

FIGURES FOR THE CONSTRUCTION OF NORMAL AND DIABETIC DIETS FOR ADULTS

	Grams per Kilo Average Body Wt. per day			Total Grams Average Weight, 70 Kilos			Calories (Moderate activity)	
	C	P	F	C	P	F	Total	Per Kilo Body Wt. per day
NORMAL DIET.....	4-6	1-1.5	1-2	280-420	70-105	70-140	2800-3150	40-45
	Grams per Kilo Average Body Wt. per day			Total Grams Average weight, 70 Kilos			**Calories	
	*C	P	F	C	P	F	Total	Per Kilo Body Wt. per day
DIABETIC DIETS:								
Overweight.....	1.4-2.1	1.0-1.2	0.5-1.0	100-150	70-85	35-70	1000-1600	14-22
Average weight.....	2.1-2.8	1.2-1.5	1.0-1.0	150-200	85-105	70-110	1600-2200	22-31
Underweight.....	2.8-3.6	1.5-1.5	1.6-2.1	200-250	105-105	110-150	2200-2800	31-40

The amount of the food constituents may be modified within the range of the figures given to meet the needs of the patient—such as various grades of activity and associated diseases, or abnormal conditions.

When insulin is not used the amounts of earbohydrate may be lowered and the amounts of fat increased to obtain the same ealorie value.

* As a general rule, no less than 100 grams of earbohydrate are prescribed in these diets.

** As a general rule, no less than 1000 ealories are prescribed in these diets.

Amounts of minerals and vitamins are the same as for the normal diet, unless there are other requirements for associated diseases or abnormal conditions. If suffieient amounts of minerals and vitamins are not supplied by food, medication should be prescribed.

Total ealories are given in rounded numbers. To estimate total ealories multiply the grams of earbohydrate and the grams of protein by 4 and the grams of fat by 9, and total the results.

Diet for Children: For normal growth and development eildren require a normal diet with suffieient insulin to utilize it, but concentrated earbohydrates are exeluded.

NOTES FOR DIETS

PART III

DIETARY OUTLINES

FOREWORD

In the following part, a chart and a series of dietary outlines present in a brief and comprehensive form the principles that have been discussed in the text, so that the complete dietetic treatment for a disease can be seen without referring to the text.

The chart states for each disease the body part affected, its normal function, the pathological physiology or abnormal condition present, and other considerations that enter into effective treatment. It restates the normal requirements of the food constituents, as given in the text. Also it indicates for each therapeutic diet whether the requirements, with respect to food constituents, calories and consistency of foods, remain normal (N) or need to be increased (+) or decreased (—). For example,—in reading down the column for protein under the heading “Per kilogram of body weight,” it will be seen that only in certain kidney and liver disorders is a change indicated from the normal protein. Again, looking down the columns for the minerals, calcium, phosphorus, and iron, it will be seen that the requirements remain normal (N) except for some diseases in which the skeletal structure is affected or for the needs of the fetus. In reading across the page it will be seen that for many diseases there is no modification from the normal requirement of any of the food constituents.

This is the value of the table,—that to one who knows the normal requirements of the food constituents, and has an understanding of a particular disease or

abnormal condition, a glance will show what modification of the normal diet, if any, is necessary in the case of a particular dysfunction of a body part.

The dietary outlines that follow are constructed in conformity with the plan of the table, carrying the same headings and statements under each disease, but developing in greater detail the dietetic treatment that is indicated in the table.

The description of the diseases concerned in these outlines presents only certain fundamental facts that are pertinent to dietetic treatment, so that the principles underlying diet therapy will stand forth clearly in relation to medical findings and treatment. No attempt has been made to give complete medical data. This will already have been acquired or will need to be secured from other sources.

Each dietary outline includes a brief review of the environmental factors that influence the effectiveness of the diet, and suggestions relative to the education of the patient. For a more detailed discussion, reference may be made to the text (Chapters 4, 5, 6).

When the diagnosis is established, the physician will consider the aid to be obtained from diet therapy. Seldom, however, is there but one disease to be treated. The food prescription must often consider an associated condition, sometimes more than one. A dietary planned to help to compensate for only one condition may be harmful to another, and may need adjustment to meet the requirements of various diseases. In view of such a possibility there have been listed, alpha-

FOOD CONSTITUENTS NEEDED PER DAY FOR THE NORMAL DIET AND THEIR VARIATION IN THERAPEUTIC DIETS

Body Conditions	Body Parts Affected	Physiology	Pathological Physiology and Abnormal Conditions	Food Constituents per Day											Other Factors Contributing to Effective Dietetic Treatment																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
				Grams per Kilogram Average Body Weight		Calories	Grams			Milli-grams	I. U.	Micro-grams		Milli-grams		I. U.	Consistency, Fiber																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
				Carbo-hydrate	Protein		Fat	Calcium	Phos-phorus			Sodium Chloride	Iron	Vitamin A				Thiamine	Riboflavin	Niacin	Ascorbic Acid	Vitamin D																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Child Normal	Entire body	The maintenance of health and the keeping of all body parts and functions in normal condition.		6 to 14	1.5 to 3.5	1 to 5	•	•	•	•	•	•	•	•	•	•	•	400	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

[illegible]

betically, at the end of each outline, abnormal or pathological conditions that may occur, one or several of them, in association with the disease.

The intention of the repetition of statement in the outlines is that under each disease shall be found complete data for the diet.

The dietary outline for pregnancy will serve to illustrate the use of this material. With the preliminary statement of the conditions that indicate body changes, the normal food requirements will come to mind automatically, or they can be reviewed in the first outline—that for the Normal Diet. The directions for dietetic treatment follow, with a statement of the necessary variations from the normal in food constituents to meet the body changes (in this case an increase of minerals and vitamins) and a brief review of the foods (milk, fruits, and vegetables) that will make valuable contributions of minerals and vitamins. To supplement the statement of the required amounts of the food constituents,—for example, 1.5 grams of cal-

cium,—reference to the Tables of Food Values and Measures will guide the choice of food to satisfy these requirements. Further help will be gained from the tables listing foods equivalent in calcium, phosphorus, iron and the vitamins (Tables 35 to 51), as well as the tables listing fruits and vegetables according to their content of minerals (Tables 34, 37 and 40) and those giving various combinations that will supply the day's requirement (Tables 36, 39, 42). Likewise when the protein needs to be reduced, as in certain kidney complications, or the calories, for reduction of weight, help will be gained from the tables that give the protein, carbohydrate and fat contents of the foods in terms of their equivalent values (Tables 28, 30, 31 and 32).

As research in the fields of both medicine and nutrition adds new knowledge, adjustments will doubtless need to be made in diet therapy. But the principle underlying diet construction will remain steadfast: the diet must supply food in kinds and amounts to fulfill body needs in health and disease.

THE NORMAL DIET

DIETARY OUTLINE

Body part affected: The whole body.

Physiology: The maintenance of all body parts and functions in normal condition.

Medical examination: The condition of the body is checked by a complete medical examination, including:

Comparison of present weight with the average weight.

Determination of blood pressure, pulse, temperature; examination of head, heart, lungs, abdomen, and extremities.

Laboratory data: Laboratory studies of blood and urine.

Dietetic treatment: Foods to supply the food constituents in amounts adequate for the protection of health.

The food constituents:

Carbohydrate:

Amount:

Adults:..... 4-6 grams per kilogram average body weight.

Children:

1-3 years.... 10-14 grams per kilogram average body weight.

4-6 years.... 8-12 grams per kilogram average body weight.

7-12 years.... 6-10 grams per kilogram average body weight.

Girls and Boys:

13-20 years.... 6-8 grams per kilogram average body weight.

Qualifying factor: There should be sufficient cellulose to aid normal bowel elimination.

Protein:

Amount:

Adults:..... 1-1.5 grams per kilogram average body weight.

Children:

1-3 years.... 3-3.5 grams per kilogram average body weight.

4-6 years.... 2.5-3 grams per kilogram average body weight.

7-12 years.... 2-2.5 grams per kilogram average body weight.

Girls:

13-15 years.... 1.5-2 grams per kilogram average body weight.

16-20 years.... 1.25-1.5 grams per kilogram average body weight.

Boys:

13-20 years.... 1.5-2 grams per kilogram average body weight.

Qualifying factor: One third to one half the minimum requirement should be complete protein.

Fat:

Amount:

Adults:..... 1-2 grams per kilogram average body weight.

Children:

1-3 years.... 4-5 grams per kilogram average body weight.

4-9 years.... 3-4 grams per kilogram average body weight.

10-12 years.... 2-3 grams per kilogram average body weight.

Girls:

13-15 years.... 2-3 grams per kilogram average body weight.

16-20 years.... 1-2 grams per kilogram average body weight.

Boys:

13-20 years.... 2.5-3 grams per kilogram average body weight.

Qualifying factor: There should be adequate amounts of the fats that carry the fat-soluble vitamins.

Minerals:

Amount:

	Calcium	Phosphorus	Iron
	Grams per Day	Grams per Day	Milligrams per Day
Adults:.....	1.0	1.5	12
Children:			
Under 1 year.....	1.0	1.0	6
1-3 years.....	1.0	1.0	7
4-6 years.....	1.0	1.0	8
7-9 years.....	1.0	1.0	10
10-12 years.....	1.2	1.2	12
Girls:			
13-15 years.....	1.3	1.3	15
16-20 years.....	1.0	1.5	15
Boys:			
13-15 years.....	1.4	1.4	15
16-20 years.....	1.4	1.4	15

Qualifying factor: The foods that supply adequate amounts of these minerals usually carry other necessary minerals.

Vitamins:

Amount:

	Vitamin A	Thiamine	Riboflavin	Niacin	Ascorbic Acid	Vitamin D*
	Inter- national Units	Micro- grams	Micro- grams	Milligrams	Milligrams	Inter- national Units
Adults: Moderate activity						
Man.....	5000	1500	1800	15	75	
Woman.....	5000	1200	1500	12	70	
Children:						
Under 1 year.....	1500	400	600	4	30	400
1-3 years.....	2000	600	900	6	35	400
4-6 years.....	2500	800	1200	8	50	400
7-9 years.....	3500	1000	1500	10	60	400
10-12 years.....	4500	1200	1800	12	75	400
Girls:						
13-15 years.....	5000	1300	2000	13	80	400
16-20 years.....	5000	1200	1800	12	80	400
Boys:						
13-15 years.....	5000	1500	2000	15	90	400
16-20 years.....	6000	1700	2500	17	100	400

* The amount of supplemental vitamin D needed by active, healthy adults leading a normal life appears to be minimal. Adults who are unduly shielded from sunlight may need to ingest small quantities of vitamin D.

Qualifying factor: These amounts are supplied by the foods of the protective diet.

Fluid:

Amount:

Adult: Equivalent to 6-8 glasses of water per day.

Child: Equivalent to 3-4 glasses of water in addition to milk per day.

Qualifying factor: Foods as well as beverages supply fluid.

Foods:

Milk: 1 quart daily for the child. 1 pint daily for the adult. Milk provides, liberally, protein containing all the essential amino acids, carbohydrate that is readily utilized, and fat that is especially valuable as a carrier of vitamin A. Its distinctive contribution is calcium, one quart per day supplying, in full, the calcium requirement of the child. It provides liberal amounts of phosphorus, and its content of iron, though low proportionately, is of excellent quality. Ascorbic acid is present in raw milk to a limited degree, and is not entirely destroyed by pasteurization. The small amount of vitamin D in milk can be greatly increased by various methods. Milk adds to the thiamine content of the diet and is an excellent, almost necessary source of riboflavin and a good source of niacin. Its contribution of these many food constituents gives milk a preeminent place in a protective diet.

Cheese*: 1 ounce. An ounce of American cheese contains approximately the same amount of calcium and phosphorus as 1 cup of milk, cream cheese only half as much, and cottage cheese almost no calcium. Cheese is also a good source of protein, fat and the vitamins.

Egg*: one, preferably every day.

Meat, fish or poultry*: $\frac{1}{4}$ pound. Meat and eggs supply protein of excellent quality, phosphorus and iron, thiamine, riboflavin and niacin. The glandular organs and eggs are also sources of vitamin A. Liver and egg yolk contribute vitamin D, but in

* These foods may be exchanged for other protein foods. (One-third to one-half the amount of protein must be complete protein.) See protein exchanges, Table 31.

small amounts. Fish supplies protein, phosphorus and some thiamine, riboflavin and niacin. Legumes contribute carbohydrate as well as calcium, iron, thiamine, riboflavin and niacin. The protein of legumes lacks certain essential amino acids, but these can be supplied by supplementing the legumes with foods containing complete protein.

Butter and fats: 9 teaspoons of fat per day including butter, fortified oleomargarine and other kinds of fat. Fats provide energy. Butter, fortified oleomargarine and cream contribute also the fat-soluble vitamin A. Fish oils furnish fat-soluble vitamins A and D in liberal amounts and for this reason are used for medication. The vegetable fats, unless fortified, and the oils supply only energy.

Vegetables and Fruits: At least two servings of vegetables every day. For safety use a serving of a green, leafy vegetable or certain yellow vegetables to ensure vitamin A. Potato in addition to other vegetables if desired. At least 2 servings of fruit every day. For safety use a citrus fruit daily to ensure ascorbic acid. Vegetables and fruits are important sources of minerals and vitamins. They vary in their content of these food constituents, both as to kinds and amounts, as will be seen on reference to the Tables. Certain green, leafy vegetables and a few of the yellow vegetables are especially good sources of vitamin A; the seed vegetables, containing the embryo of thiamine; and the citrus fruits and vegetables that are eaten uncooked, of ascorbic acid. The canned vegetables, cooked under mechanical processes, also retain the greater part of their ascorbic acid content. Both vegetables and fruits are desirable sources of carbohydrate, contained in varying amounts, and good sources of cellulose. They add to the alkaline reserve of the body. The organic acids of fruit aid bowel elimination. Dried fruits are of high energy value because of their concentration of sugar, and contribute also vitamins and minerals.

Bread, cereals, flour and flour products: Use 6 or more servings per day. The cereal products (as well as the potato) are the main sources of carbohydrate for most people. They contain some protein also, but of a type lacking the essential amino acids,—a deficiency which can be made up by combining the cereals with milk or another food containing complete protein. The refined cereal product contribute little else than carbohydrate and a small amount of protein; but the whole grain or restored or enriched product supplies minerals—iron, in particular—thiamine, riboflavin and niacin.

Sugar, sweets or desserts: Amounts dependent upon caloric needs. Other sweets as desired. Sugar and some other concentrated sweets such as jellies, honey and most kinds of candy contribute little besides carbohydrate. They are pleasing to the taste, but before satisfying the palate with these "one-sided foods" sufficient amounts of other foods should be given to fulfill the protein, mineral and vitamin needs of the body. Dried fruits furnish also vitamins and minerals, and molasses is a good source of calcium and an excellent source of iron, and these foods can be made into attractive candies.

Coffee and tea should not be allowed to displace essential foods. Without cream or sugar they have no food value.

Meals:

The number of meals should follow the established routine of the patient, provided the food intake is adequate in quantity and quality to fulfill the body's needs. It may be desirable that the younger children especially, and some adults as well, should have three small meals with intermediate feedings. For all children the evening meal should be light.

Environmental factors that influence the effectiveness of the diet:

Effective dietetic treatment requires conditions of living favorable to the practice of good habits of personal hygiene, both physical and mental. Regular habits of sleep, rest and activity, and regularity of bowel elimination are essential. Matters pertaining to income, the occupation, the necessities of life, and to racial and religious customs exert an important influence on the carrying out of the diet.

Education of the patient:

To carry out his diet intelligently the patient should understand the relation of food to the body, and he should know the kinds and amounts of food that will fulfill his needs for growth and health. He should know the equivalent values of foods, to be able to adapt his diet to tastes, desires, habits, income and other environmental conditions, and at the same

time fulfill his food requirements. He will acquire this knowledge the more surely through methods of visual education.

FOOD ALLERGY

DIETARY OUTLINE

Body part affected: Skin and mucous membrane, especially of the respiratory and gastro-intestinal tract.

Physiology: Foods are assimilated and used normally, without evidence of sensitivity on the part of the body toward any particular food or foods.

Pathological physiology: Hypersensitivity of the body cells to certain foods (i.e., to a protein that is specific to the food).

Usually a familial tendency to food sensitiveness, symptoms often varying in different members of the family.

Contributing factors: Climate, season, sunshine, moisture, heat, cold.

Dust, smoke, fumes, air conditions.

Clothing, furs, feathers, emanations and substances from plants and animals, toilet accessories, antiseptics and detergents, tobacco.

Neighborhood, school, occupation, recreation.

Household furniture and furnishings.

Emotional disturbances.

Infections.

Laboratory data: Routine urine and blood studies as required in a complete medical examination.

Radiographs to rule out other respiratory and gastrointestinal conditions that may produce the same symptoms that arise in food allergy.

Tests for diagnosis: Various types of tests (skin and mucous membrane) made with the protein extracts of the commonly used foods.

Elimination diets.

Dietetic Treatment: Foods to supply the food constituents in amounts adequate to fulfill body needs and maintain the desired weight. Treatment may include one or more of the following procedures, depending upon the practice of the physician: complete elimination of the foods to which skin tests show the patient to be allergic; routine restriction, without tests, of foods that commonly give rise to unfavorable symptoms; omission of foods that belong to the same biologic group as the food to which the patient is found to be allergic; use of the elimination diet, the choice of foods being guided by the results obtained; avoidance of foods that are significant causes of symptoms as indicated by the patient's history. When the foods allowed cannot supply adequate amounts of the food constituents it will be necessary to supplement the diet by medication. Care should be taken that the medication does not contain a substance to which the patient is allergic.

The Food Constituents:

Carbohydrate:

Amount: Normal.

Qualifying factor: An excess amount of concentrated sweets may produce fermentation in the gastrointestinal tract and should be avoided.

Protein:

Amount: Normal.

Qualifying factor: If the patient is sensitive to many of the foods containing complete protein, liberal amounts of the foods that are allowed are given to insure the adequacy of the diet.

Fat:

Amount: Normal.

Qualifying factor: Easily digested fats of low melting point should be chosen.

Minerals:

Amount: Normal.

Qualifying factor: When foods that would supply the mineral requirement have to be omitted, medication must be prescribed.

Vitamins:

Amount: Normal.

Qualifying factor: If amounts supplied by food are inadequate, medication should be prescribed. Care should be taken that the patient is not allergic to the foods chosen for their high vitamin content.

Foods:

A. Foods to which the patient is sensitive are determined by skin tests or trial food tests, and by the personal history of food sensitiveness. They must be entirely eliminated until the patient has been symptom free for a satisfactory period. The foods may then be re-introduced into the diet, one at a time, and in very small amounts, until it becomes clear in what amounts, if any, they can be tolerated.

B. Foods that are to be restricted, without tests, according to various authorities:

Very hot and very cold foods.

Condiments and spices and richly spiced foods.

Concentrated sweets: candy, jam, jelly.

Fried foods, pastries and hot breads.

Various kinds of fish, especially shell-fish, the oyster excepted.

Certain kinds of meat: turkey, veal, pork, ham, bacon, liver and other organs.

Highly flavored cheeses.

Vegetables and fruits that form gas.

Nuts.

Cocoa and chocolate.

C. Foods for the diet:

Milk is one of the foods to which many people are sensitive. If it must be eliminated, special thought must be given to the adequacy of the diet, in particular with respect to the growing child. In such case the calcium, phosphorus and vitamins supplied by the diet may have to be supplemented by the use of other foods which are good sources of these food constituents, or by medication. Frequently the patient who is sensitive to milk is found to tolerate it when it is rendered hypoallergic through heating processes, as in the case of boiled, evaporated, or dried milk. Milk from animals other than the cow may be substituted if the tests are negative. Cheese, if tolerated, helps greatly to fulfill the requirements for calcium and phosphorus. Proprietary foods are offered as milk substitutes but cannot be used when they contain any of the foods forbidden to the patient.

Meat, fish and poultry of the kinds allowed should be carefully evaluated and given in amounts needed to make an adequate contribution to the diet.

Eggs, a valuable source of many food constituents, are common offenders. When they have to be excluded from the diet careful thought must be given to the selection of foods equivalent in food value. Medication may have to be prescribed.

Fats: Usually butter is tolerated, but if not, the fat must be supplied by other foods and care must be taken to secure sufficient vitamin A from food or by medication. Heavy cream, which may be diluted if desired, is often tolerated even though the patient is sensitive to milk. Only easily digested fats of low melting point should be used. The oils and fats derived from foods to which the patient is sensitive should not be used in any way.

Vegetables and fruits: Various vegetables and fruits may have to be eliminated. Liberal amounts of those that are allowed, especially the seed vegetables, should be given, to ensure sufficient minerals and vitamins and to increase the carbohydrate content of the diet. The soybean and its various preparations are excellent sources of protein and fat, minerals and vitamins. They sometimes are used as substitutes for meat, milk and egg in the diet. When oranges and tomatoes are eliminated, special care must be taken to ensure adequate amounts of ascorbic acid by the use of other foods or by medication.

Breads and cereals: The grains—wheat, oats, rye, rice, corn, barley and buckwheat—

are common offenders. Wheat is the only cereal flour that makes a good raised bread. Breads made from other cereal flours are not so palatable and are not eaten so freely. When wheat is not allowed, therefore, care must be taken to see that sufficient amounts of minerals and vitamins are supplied from other food sources or by medication.

Sugar and concentrated sweets, such as candy, jam and jelly, should not be allowed in large amounts as they tend to produce fermentation in the gastro-intestinal tract.

Nuts may not be found by any of the tests to be the cause of food allergy, but they may provoke irritation, with coughing.

Meals:

The number of meals should follow the established routine of the patient. The food should be so distributed that there will be no excess at any meal. It is advisable, especially for children, to have the main meal at noon time. If the adult desires food at bedtime, only a small amount of food that is digestible, and of a kind allowed by the diet, should be taken.

Environmental factors that influence the effectiveness of the diet:

Good habits of personal hygiene, both physical and mental, should be established.

If many of the commonly used and less expensive foods are eliminated, foods may have to be prescribed that will necessarily increase the cost of the diet.

Medication should be taken only under the direction of a physician. If the patient is sensitive to such substances as animal emanations, he should avoid contact with them. If pollens from trees or grasses affect him unfavorably, he should be desensitized to them.

The nutritional history of the patient is of great importance in revealing factors, emotional and environmental as well as clinical, that are direct causes of, or predisposing to, symptoms.

Education of the patient:

The patient should learn the meaning of food allergy and its relation to his condition. He should understand that strict adherence to the diet is necessary to evaluate the effectiveness of the diet. He should learn that by taking larger amounts of the foods that he can tolerate and by including in his diet foods with which he may be unfamiliar or unaccustomed but which are allowed, he can help to fulfill his requirements of food constituents and calories.

In addition to verbal instruction he should be given printed material to take home. This should include:

Lists of foods that he is *not* to eat, including the "hidden" foods,—those containing even minute amounts of a forbidden food that is not visible or revealed by taste or descriptive name.

Lists of foods that he *can* eat (including only the foods to which he is not sensitive) with the amounts necessary to fulfill normal food requirements.

Lists of equivalents within the food groups allowed, to help him to vary his meals.

Recipes which contain only foods that are allowed,—for example, recipes for bread that contain only the cereals allowed.

All of these instructions must be adapted to the intelligence of the patient.

Abnormal conditions and diseases that may be found in association with food allergy:

Angioneurotic edema.

Bronchial asthma.

Eczema and other skin eruptions.

Gastrointestinal disturbances.

Hay fever.

Migraine.

Nasal obstructions.

Pruritis.

Purpura.

Sinus conditions.

Upper respiratory infections.
Urticaria.
Vasomotor rhinitis.

ATONIC CONSTIPATION

DIETARY OUTLINE

Body part affected: The gastrointestinal tract, particularly the colon.

Physiology: Formation of feces that are soft but firm in consistency, and which contain undigested residue of food, unabsorbed secretions, water and bacteria; elimination of feces, sufficient in quantity and at regular frequency—daily or at least every forty-eight hours. Absorption of water.

Abnormal conditions: Regular action of the bowels is deranged:

- Irregularity, infrequency and difficulty of defecation.
- Stools insufficient in quantity.
- Stools abnormally hard and dry.
- Lack of muscle tone of the intestine.
- Redundant colon sometimes present.

Contributing factors: Faulty food habits.

- Insufficient fluid intake.
- Insufficient food intake, in either kind or amount or in both.
- Insufficient activity.
- Type of occupation.
- Unfavorable environment:
 - Inadequate toilet facilities.
 - Sense of hurry.
- Body fatigue.
- Poor posture.
- Excessive use of cathartics.
- Emotional strain.

Laboratory data: Routine urine and blood studies as required in a complete medical examination.

Radiographs of the intestine are desirable to determine the type of constipation, to rule out organic obstruction and to confirm diagnosis.

Examination of feces.

Dietetic treatment: Foods to supply the food constituents in amounts adequate to fulfill body needs and maintain desired weight. The diet should include sufficient water, and sufficient but not excessive bulk, to help to restore the normal muscle tone of the intestine and the regular bowel elimination.

The food constituents:

Carbohydrate:

Amount: Normal.

Qualifying factor: Sufficient but not excessive bulk or cellulose should be provided to stimulate elimination.

Protein:

Amount: Normal.

Fat:

Amount: Normal.

Qualifying factor: Unabsorbable inorganic oil is used as an intestinal lubricant. Excessive use of mineral oil should be avoided, however, as it interferes with the absorption of carotene.

Minerals:

Amount: Normal.

Vitamins:

Amount: Normal.

Qualifying factor: There should be liberal amounts of foods containing thiamine to pro-

mote the tonicity of the digestive tract. Medication is prescribed, when needed, to increase the thiamine content.

Fluid:

Amount: Normal, 6 to 8 glasses daily.

Qualifying factor: Foods as well as beverages supply fluid.

Foods:

Milk adds to the thiamine content of the diet. It is also a good source of other vitamins, and of protein, calcium and phosphorus, carbohydrate and fat.

Meat, fish, poultry and egg provide efficient protein and varying amounts of minerals and vitamins. The glandular organs, fish roe and eggs add to the thiamine content of the diet.

Butter, fortified oleomargarine and cream provide vitamin A besides adding to the fat content of the diet. Vegetable oils and fats that have not been fortified are lacking in vitamin A.

Vegetables and fruits also contribute thiamine, and their cellulose and organic acids have laxative properties. They tend to form gas and act as a slight stimulant by breaking up hard masses in the intestine. They supply other vitamins, as well as minerals and carbohydrate in varying amounts. Three to four servings of vegetables and two to three servings of fruit should be taken daily for the necessary cellulose.

Whole grain bread and cereals are excellent sources of thiamine and of cellulose, as well as of carbohydrate. Their mineral content also is high. At least one serving of a whole grain product should be taken at each meal.

Candy and concentrated starches and sweets should not be allowed to the extent of excluding from the day's food intake the foods necessary to supply vitamins and minerals in adequate amounts.

Meals:

Meals may follow the established routine of the patient but must include the total amount of food necessary to fulfill the food prescription. Eating between meals is not desirable, except when intermediate feedings at regular hours are necessary. Fluids taken before and after meals, particularly the breakfast, often facilitate the bowel movement.

Environmental factors that influence the effectiveness of the diet:

Sufficient amounts of rest and sleep, a liberal intake of water, the establishment of a regular time for the daily bowel movement and freedom from mental and emotional distress assist bowel elimination. Comfortable toilet facilities should be available with satisfactory conditions of heat, light and ventilation. Exercises to increase muscle tone and to improve posture should be directed by the physician. Dental defects should be corrected, for proper mastication.

Education of the patient:

The patient should be shown a picture or chart of the intestine or colon. He should understand what its function is, and that in his body its functioning is faulty, needing to be "toned up." He should understand that the purpose of his diet is to stimulate the intestine, or colon, through a food intake that is adequate both in kind and amount. He should understand that proper habits of hygiene are of great importance in cultivating daily bowel elimination—in particular the visit to the toilet at a regular time and so planned that there will be no sense of hurry; also, that the response to the call for defecation should not be delayed lest the desire pass away.

Abnormal conditions and diseases that may be found in association with atonic constipation:

Avitaminosis.

Poor posture.

Psychoneurosis.

SPASTIC CONSTIPATION

DIETARY OUTLINE

Body part affected: The gastrointestinal tract, particularly the colon.

Physiology: Formation of feces that are soft but firm in consistency and which contain undigested food.

gested residue of food, unabsorbed secretions, water and bacteria; elimination of feces, sufficient in quantity and at regular frequency—daily or at least every forty-eight hours. Absorption of water.

Abnormal conditions: Spasm, or alternating spasm and atony.
 Redundant colon, in some cases.
 Extreme sensitivity to any type of stimulation.

Contributing factors: Hyperirritability of the colon due to:
 Excessive use of cathartics.
 Too liberal use of coarse foods.
 Immoderate use of foods that are chemically stimulating.
 Immoderate use of tobacco and alcohol.
 Emotional disturbances.
 Body fatigue.
 A combination of these various factors.

Laboratory data: Routine urine and blood studies as required in a complete medical examination.
 Radiographs of the intestine to determine type of constipation and to rule out organic obstructions.
 Examination of feces.

Dietetic treatment: Foods to supply the food constituents in amounts adequate to fulfill body needs and maintain desired weight. The foods supplied must be smooth in consistency and as nearly as possible non-irritating to the gastrointestinal tract (see Peptic Ulcer, p. 201).

The food constituents:

Carbohydrate:

Amount: Normal.

Qualifying factor: Concentrated sweets and coarse foods should be omitted to avoid irritation.

Protein:

Amount: Normal.

Fat:

Amount: Normal.

Minerals:

Amount: Normal.

Qualifying factor: If amounts supplied by food are insufficient, medication should be prescribed.

Vitamins:

Amount: Normal.

Qualifying factor: Foods should supply thiamine in liberal amounts, to improve the tonicity of the digestive tract. When foods do not supply sufficient amounts of thiamine, medication is prescribed.

Fluid:

Amount: Normal.

Qualifying factor: The desired amount may be supplied by foods as well as by beverages.

Foods:

A. Consistency:

The diet must be smooth and bland. Any residue should be soft and non-irritating. Fruits and vegetables should be cooked and strained or mashed to soften the cellulose, and as much of the cellulose as possible should be removed. Refined cereals should be used, but whole grain cereals are permitted if very finely ground, or cooked and strained. Only meat of short fiber, and fish or chicken should be given, and in some conditions they are entirely omitted. Under these circumstances the mineral and vitamin intake may be inadequate and medication must be prescribed.

Variety in food, as to kind and consistency, is increased gradually as the patient's condition improves, until the normal diet can again be used.

- B. Foods to be avoided as causing irritation because they increase motility, stimulate the gastric juice, contain undigested fiber, or tend to form gas:
- Fruits, vegetables, whole grain cereals and nuts, that contain appreciable amounts of cellulose.
 - Foods that ferment readily and form gas—concentrated sweets and foods high in cellulose.
 - Highly seasoned foods.
 - Tea, coffee and cocoa.
 - Alcohol, used sparingly, if at all.

C. Foods for the diet:

- Milk, a bland food containing no cellulose and contributing richly to body needs, may be used as the basis of this diet. It provides a good quality of protein that is non-stimulating, easily digested carbohydrate and fat, liberal amounts of calcium and phosphorus and varying amounts of the vitamins.
- Meat, fish and poultry, valuable for their protein, mineral and vitamin content, should be given as soon as possible, using first the kinds that are of short fiber. The glandular organs, and fish roe and oysters are sources of thiamine, riboflavin and niacin.
- Eggs are usually well tolerated. They are a good source of protein, phosphorus, iron and most of the vitamins.
- Butter and cream provide fat which carries vitamin A, whereas vegetable oils and fats are lacking in the vitamin unless they have been fortified with vitamin A.
- Vegetables and fruits, which supply minerals and vitamins, as well as carbohydrate in varying amounts, should be added to the diet as soon as they can be tolerated. Strained orange juice and tomato juice may be given early in treatment, and as the condition of the patient improves, vegetables containing least cellulose, and tender vegetables, such as young beets and carrots, the tender leaves of spinach, squash, string beans, asparagus tips, and others of like consistency, may be given without straining.
- White bread and refined cereals that have been enriched may be used as they carry vitamins and minerals.
- Sugar and concentrated sweets, which ferment easily and produce gas and consequently are irritating, should be included only in very small amounts.

Meals:

Meals may be adjusted to the established routine of the patient, provided the amount and kinds of food eaten fulfill the food prescription.

Environmental factors that influence the effectiveness of the diet:

Good habits of personal hygiene, both physical and mental, are exceedingly important,—in particular the habit of the regular bowel movement adapted to the daily routine. Medication should be used only as prescribed by the physician.

Education of the patient:

The patient should be shown a picture or chart of the intestine, in both normal and spastic conditions. He should understand the function of the intestine and that his condition is due to irregular spasms of the colon.

He should understand that the purpose of his diet is to overcome this irritability and help to restore the normal movement of the bowel by using foods that are soft and smooth in consistency and non-irritating.

He should be shown the refined cereal, and the use of the sieve or strainer to remove the roughage in his servings of fruit, vegetables and whole grain cereal. He should be given a list of the types and kinds of food that he should avoid. He should have recipes to help him to vary his diet.

He should recognize that sufficient rest periods and sleep, and a regular time for the bowel movement under conditions of leisure and serenity, are helpful in establishing the habit of daily bowel elimination.

Abnormal conditions and diseases that may be found in association with spastic constipation:

- Avitaminosis.
- Gastric disturbances.
- Poor posture.
- Psychoneurosis.

ULCERATIVE COLITIS

DIETARY OUTLINE

Body part affected: The large intestine.

Physiology: Formation and elimination of the feces which contain indigestible food residue, unabsorbed digestive secretions, water, and bacteria.

Abnormal conditions: Changes in secretion (excessive mucous production).

Changes in motility (predominantly increased spasticity).

Pathological physiology: Destructive ulcerating lesions involving the colon, wholly or in part, with marked inflammation. Exudation and hemorrhage from the ulcerated areas cause an increased loss of the products of protein breakdown in the feces.

Laboratory data: Routine urine and blood studies as required in a complete medical examination.

Examination of the feces.

Proctoscopic examination.

Bacteriological examination of secretions from lesions in the colon.

Radiographic studies.

Dietetic treatment: Foods to supply the food constituents in amounts adequate to fulfill body needs and maintain desired weight. The food must be bland, non-irritating and non-stimulating. Protein is increased to high normal to compensate for loss of protein in the feces and to aid in the repair of damaged tissue.

The food constituents:

Carbohydrate:

Amount: Normal.

Qualifying factor: Cellulose, which is an irritant, and concentrated sweets, which may form gas and produce irritation, should be excluded.

Protein:

Amount: High Normal.

Qualifying factor: Meats of long fiber, irritating to the colon, should not be given.

Easily assimilated protein hydrolysates are sometimes given when the patient is unable to take sufficient protein in the food.

Fat:

Amount: Normal.

Minerals:

Amount: Normal.

Qualifying factor: If sufficient amounts are not supplied by food, medication should be prescribed.

Vitamins:

Amount: Increased.

Qualifying factor: If sufficient amounts are not provided by food, medication is prescribed.

Foods:

A. Consistency:

The diet should be smooth, with as little residue as possible. Fruits and vegetables should be cooked and strained, to soften the cellulose and to remove as much of it as possible. Cereal products must be of such a consistency as to avoid irritation. White bread and crackers are generally used, but those made from very finely ground whole grain flour are allowed. Cereals should be refined, but whole grain cereals are permitted if very finely ground, or cooked and strained.

B. Foods to be avoided as causing irritation because they increase motility, stimulate the gastric juice, contain undigested fiber, or tend to form gas:

Fruits, vegetables and whole grain cereals that contain appreciable amounts of cellulose.

Meats containing long fiber.

Concentrated sweets which ferment easily and produce gas.

Condiments and spices,—pepper, vinegar, mustard, and other sources.

Extractives from meat,—broths, soups and gravies.

Very hot or very cold foods, especially the latter.

Nuts.

Tea, coffee and cocoa.

C. Foods for the diet:

Milk used as purchased is often not well tolerated by the ulcerative colitis patient, particularly when the disease is in the acute stage. Boiled or evaporated milk, however, may be taken without untoward discomfort. Whether or not milk can be included in the diet depends upon the tolerance of the patient. Some authorities have found that milk, being a bland food without cellulose, can be used freely in most cases, while others believe that it causes irritation in the acute phase of the illness because of its high residue. In general, however, milk should be included whenever possible because of its valuable contribution of protein, minerals and vitamins.

Meat, fish and chicken are valuable for their protein, iron and vitamins and should be added to the diet as soon as tolerated, the most tender kinds being given first.

Eggs are a good source of protein, fat, phosphorus, iron and most of the vitamins.

Butter, cream, and fortified oleomargarine provide fat which carries vitamin A, whereas other vegetable oils and fats are lacking in the vitamin unless they are fortified.

Vegetables and fruits supply minerals and vitamins and should be added to the diet as soon as possible. Strained tomato or orange juice may be given first, then cooked and strained vegetables and fruits, and when the condition is greatly improved, well-cooked, tender, young vegetables, without straining,—young beets and carrots, the tender leaves of spinach, squash, string beans, asparagus tips, and others of like consistency.

White bread and refined cereals that have been enriched may be used as they carry vitamins and minerals.

Sugar and concentrated sweets tend to ferment, producing gas, and should be given only in very small amounts.

Tea, coffee or cocoa should be used only in small amounts for flavoring.

Meals:

Several small meals are usually better tolerated by the patient than three large meals.

Environmental factors that influence the effectiveness of the diet:

Good habits of personal hygiene, both physical and mental, should be established,—in particular the habit of the regular bowel movement adjusted to the daily routine. Fatigue and mental and emotional strain should be avoided.

Education of the patient:

The patient should be shown a picture of the colon and helped to understand its function and the reason for its dysfunction in his body.

He should understand that to facilitate healing of the ulcerating lesions, his diet must consist of foods that are smooth in consistency and nonirritating.

He should know what these foods are. He may be shown refined cereals and finely ground whole grain cereals, and the use of sieve or strainer for removal of the roughage of fruits, vegetables and whole grain cereals. Samples of commercially strained foods will indicate to him that strained fruits, vegetables and cereals can be purchased.

He should understand the restriction necessary with respect to meat, and that when his condition is so improved that meat is allowed, he should eat first only short fibered kinds,

or fish or chicken; that to place least strain on the digestive tract, meat should be scraped, minced or chopped, stewed or roasted,—never fried.

He should be helped to plan a regime,—sufficient rest and sleep, proper conditions for meals and recreation,—that will relieve him as much as possible from physical and mental strain.

Abnormal conditions and diseases that may be found in association with colitis:

Anemia.

Avitaminosis.

Psychoneurosis.

Underweight.

PEPTIC ULCER

DIETARY OUTLINE

Body part affected: The stomach or the duodenum.

Physiology: Stomach: the softening and breaking of food by mechanical action and the digestion of protein by pepsin and hydrochloric acid.

Duodenum: digestion of carbohydrate, protein and fat.

Pathological physiology: Ulceration to varying depths, associated with inflammation of the surrounding mucosa, occasionally with hemorrhage and perforation.

Change in motility, with or without spasm.

Hydrochloric acid often present in excess. Achlorhydria possible in gastric ulcer.

Laboratory data: Routine urine and blood studies as required in a complete medical examination.

Radiographic studies.

Examination of the gastric contents to determine the presence of acid and the amount of free acid.

Examination of the feces for occult blood.

Dietetic treatment: Foods to supply the food constituents in amounts adequate to fulfill body needs and maintain the desired weight. To ensure adequacy of iron the cereals having a high iron content should be used. Orange juice should be given as early as possible to provide ascorbic acid. According to present figures, until the diet allows meat, it is difficult to supply sufficient niacin. The foods must be of smooth consistency, those stimulating to the gastric secretion or chemically, mechanically or thermally irritating, to be excluded. Since the amount of fat used is increased for therapeutic purposes, the amount of carbohydrate is sometimes decreased to low normal to maintain the desired caloric intake. Some authorities now recommend that the protein content be increased. When a high protein intake is prescribed, medication in the form of protein hydrolysates is sometimes given to supplement the diet in the early stages of treatment.

The recent trend in the treatment of gastric or duodenal hemorrhage is to start oral feedings as soon as shock, nausea, and vomiting have been brought under control. Early feedings reduce gastric motility, promote more rapid healing, and increase the rate of blood regeneration. In general, the dietary principles of the ulcer regime may be followed, with cautious progression of feedings according to the condition of the patient. There are some who use Meulengracht's method of feeding patients generously during the period of bleeding. A few authorities, however, recommend that nothing be given by mouth until bleeding has stopped.

The food constituents:

Carbohydrate:

Amount: Normal.

Qualifying factor: Concentrated sweets should be excluded because they form gas.

Protein:

Amount: Normal to high normal.

Qualifying factor: Meats of long fiber should be excluded to avoid irritation, and meat extractives to avoid stimulation. Protein hydrolysates may be prescribed by the physician to supplement the diet.

Fat:

Amount: Increased.

Qualifying factor: To lessen irritation by repressing the flow of hydrochloric acid.

Dairy and vegetable fats, which are more easily digested, because of their low melting point, are preferred.

Minerals:

Amount: Normal.

Qualifying factor: If the amounts provided by food are insufficient, medication should be prescribed.

Vitamins:

Amount: Normal.

Qualifying factor: If the amounts supplied by food are insufficient, medication should be prescribed.

Foods:

A. Consistency:

The diet should be smooth, with as little roughage as possible. Fruits and vegetables are strained to remove skin and fiber as well as seeds. Refined cereals should be used, or whole grain cereals that are very finely ground or strained as when prepared for infants.

B. Foods to be avoided as causing irritation because they increase motility, stimulate the gastric juice, contain undigested fiber, or tend to form gas:

Extractives from meat,—broths, soups and gravies.

Condiments and spices,—pepper, vinegar, mustard and other sources.

Meats containing long fiber.

Fruits, vegetables, whole grain cereals and nuts that contain appreciable amounts of fiber.

Foods that ferment readily, forming gas—concentrated sweets, foods high in cellulose, and strongly flavored vegetables, such as those of the onion and cabbage family.

The latter contain a sulfur compound (sinigrin) which yields irritating by-products upon hydrolysis in the digestive tract.

Tea, coffee, cocoa, carbonated and soft drinks, and alcoholic beverages.

Acid-tasting foods. Orange juice or tomato juice should be given as soon as possible for their ascorbic acid content. When taken after other food and diluted with water, they are usually tolerated.

Very hot or very cold foods.

C. Foods for the diet:

Milk, a bland food without cellulose, combining readily with the hydrochloric acid in the stomach, forms the basis of the diet. It contributes greatly to the adequacy of the diet, providing protein of good quality, carbohydrate and fat that are easily utilized, liberal amounts of calcium and phosphorus, and vitamins in varying amounts. Cream provides vitamin A. When the diet is restricted to milk and cream for a long period of time, medication should be prescribed to secure sufficient amounts of iron, thiamine and ascorbic acid.

Meat, fish and poultry contain fiber that is irritating and consequently are omitted from the diet until the patient is convalescent. Chicken, fish, and finely ground beef, having short fibers, are given first, and later, tender cuts of meat. Meat broths and gravies also should be omitted since they contain extractives that are stimulating. Highly seasoned chowders should not be used. When meat is excluded from the diet it is necessary to provide iron and vitamins from other food sources or by medication.

Eggs provide efficient protein, fat and most of the vitamins, and are a good source of phosphorus and iron. They are usually well tolerated and help to vary the diet.

Butter, fortified oleomargarine and cream help, with their fat content, to suppress the flow of hydrochloric acid. They also provide vitamin A.

Vegetables and fruits add carbohydrate and are also important for their contributions of vitamins and minerals. Many of these foods must be strained to remove the cellulose and seeds. Orange juice, grapefruit juice and tomato juice, strained, are given early in the treatment for their ascorbic acid content. As stated above,

these are usually well tolerated when taken after other foods and diluted with water. When the patient is convalescent, such tender vegetables as young carrots, beets, string beans, squash, asparagus tips and young greens such as lettuce are gradually added, without removal of cellulose. Vegetables to be avoided are broccoli, Brussels sprouts, cabbage, turnips, cauliflower, celery, green and red pepper, radishes, cucumber, okra, onions, parsnips, corn and legumes. Cooked or canned peaches and pears and fresh ripe bananas are allowed. Prunes and apricots should be cooked or strained. Applesauce should be strained, but baked apples can also be used provided that the skin and seeds are not eaten. Berries, melons, cherries, cranberries, dates, figs, grapes, pineapple, plums, raisins and rhubarb are to be avoided either because they cannot be strained or are irritating.

Bread, flour products, and cereals prepared from enriched white or finely ground flour may be used. These include white or light rye rolls or bread, plain or toasted; melba toast, zwieback, white or graham crackers; cooked or prepared refined cereals such as cream of wheat, cream of rice, strained oatmeal, cornflakes, puffed rice, puffed wheat, shredded wheat, rice krispies, rice, macaroni, spaghetti and noodles.

Sweets in concentrated form are irritating. Sugar and jelly (not jam), therefore, are included only in small amounts for flavoring. Simple desserts such as tapioca, rice, bread or plain cornstarch pudding may be used, however. In addition, gelatin and rennet desserts, custard, plain cookies, plain cakes, such as angel or sponge cake, plain ice cream, and fruit whips prepared from allowed fruits are permissible.

Meals or feedings:

The practice of the physician and the condition of the patient will determine the degree in which the diet is increased in kinds and amounts of food. Monotony in the diet can be avoided by using different combinations of the foods and flavorings allowed.

Small meals are given frequently and regularly, at intervals of one, two or three hours, depending upon the acuteness of the condition, in order that food or medication may be present in the stomach at all times to combine with the hydrochloric acid and decrease the amount of free acid. In the acute stages, feedings and medications should be continued through the night.

The chart on page 204 illustrates the rate of progress in meals and feedings. This sequence, however, is not arbitrary.

Environmental factors that influence the effectiveness of the diet:

Good habits of personal hygiene, physical and mental, are essential, with avoidance of fatigue and emotional disturbances. Attention toward the alleviation of nervous factors are of great importance. In the early stages of the illness, bed rest may be necessary to ensure good response to therapy.

Smoking and alcohol are prohibited by most physicians.

Education of the patient:

The patient should be helped, with pictures, to visualize and understand the condition of the body part affected, and to see that the ulcer is a sore, indicating that his food must be non-irritating and contain no roughage. He should be given a list of foods to be avoided. He may need to have explained and demonstrated to him the preparation and use of strained foods—vegetables, cereals and fruits.

He should have recipes, especially for ways of using milk. To help him vary his diet he should be given a list of exchanges, carefully chosen in view of the limited number of foods that he can take, and the restrictions as to method of preparation.

Abnormal conditions and diseases that may be found in association with peptic ulcer:

- Anemia.
- Avitaminosis.
- Psychoneurosis.
- Underweight.

RATE OF PROGRESS IN MEALS AND FEEDINGS

<i>At rest</i> <i>Hourly, per day</i>		<i>Ambulatory</i> <i>6 Feedings or 3 Meals with Intermediate Feedings, per day*</i>						
Milk	Milk	Milk	Milk	Milk	Milk	Milk	Milk	Milk
Cream	Cream	Cream	Cream	Cream	Cream	Cream	Cream	Cream
	Egg	Egg	Egg	Egg	Egg	Egg	Egg	Egg
	Cereal, re- fined or strained	Cereal, re- fined or strained	Cereal, re- fined or strained	Cereal, re- fined or strained	Cereal, re- fined or strained	Cereal, re- fined or strained	Cereal, re- fined or strained	Cereal, re- fined or strained
	Orange juice	Orange juice	Orange juice	Orange juice	Orange juice	Orange juice	Orange juice	Orange juice
		Toast or Crackers, white	Toast or Crackers, white	Toast or Crackers, white	Toast or Crackers, white	Toast or Crackers, white	Toast or Crackers, white	Toast or Crackers, white
		Butter	Butter	Butter	Butter	Butter	Butter	Butter
			Cheese, mild	Cheese, mild	Cheese, mild	Cheese, mild	Cheese, mild	Cheese, mild
				Potato	Potato	Potato	Potato	Potato
					Fruits, cooked and strained	Fruits, cooked and strained	Fruits, cooked and strained	Fruits, cooked and strained
						Vegetables, strained	Vegetables, strained	Vegetables, strained
							Chicken	Chicken
							Fish	Fish
							Meat, ten- der	Meat, ten- der

*Foods in last column may be used when bleeding ulcer is present and treated by the Meulengracht method.

UNDERWEIGHT

DIETARY OUTLINE

- Body part affected:** Body tissue.
- Physiology:** Normal storage of body tissue to meet the standard of average weight for growth, development and maintenance of normal body functioning.
- Abnormal condition:** Loss of body weight due to insufficient food intake in kind and amount.
- Pathological physiology:** Disturbed metabolism, as a result of physical defects and disease affecting the appetite and the proper utilization of food.
- Contributing factors:** Faulty food habits.
Fatigue.
Faulty personal hygiene—physical.
Insufficient rest or sleep.
Excessive activity.
Poor mental hygiene due to unsatisfactory environmental conditions or social maladjustment.
Poor community hygiene.
Unhealthy environment:
Lack of sunshine, fresh air, and play.
Lack of proper facilities for personal hygiene.
Body build in relation to heredity and environment.
- Laboratory data:** Routine urine and blood studies as required in a complete medical examination.
Special tests: hemoglobin, blood sugar, tuberculin test, basal metabolism, radiograph, examination of feces.

Dietetic treatment: Foods to supply the food constituents in amounts adequate to fulfill body needs and attain desired weight. The calorie intake in the form of energy foods, carbohydrate and fat, should be increased sufficiently above the normal requirements to provide an excess to be deposited as adipose tissue. Increase of vitamins to stimulate appetite is desirable, and if an increase of carbohydrate is given, increased thiamine must be given for the extra carbohydrate metabolism.

The food constituents:

Carbohydrate:

Amount: Increased.

Qualifying factor: Foods with concentrated carbohydrate are used, such as bread and cereals, vegetables and fruits (15 per cent and 20 per cent carbohydrate) and sugars.

Concentrated sweets should be used cautiously, since they cloy the appetite.

Protein:

Amount: Normal.

Fat:

Amount: Increased.

Qualifying factor: Concentrated fats,—butter, oleomargarine, oil, cream and mayonnaise,—should be given, but not in such amounts as to destroy the appetite for other foods.

Minerals:

Amount: Normal.

Vitamins:

Amount: Normal.

Qualifying factor: Foods should be high in thiamine because of the high normal or increased carbohydrate.

Foods:

A. Consistency:

In acute conditions that require much rest, the diet may consist solely of reinforced fluids, such as egg-nogs with lactose; but soft and solid foods should be added as soon as they can be tolerated. It is difficult, with only fluids, to give an adequate diet, and difficult also to avoid monotony in the fluid diet.

B. Foods for the diet:

Milk in liberal amounts helps greatly to make adequate provision of the essential food constituents; but too large an intake of milk may destroy the appetite for other necessary foods.

Meat, fish and poultry provide protein of excellent quality, as well as phosphorus, iron and some vitamins, and add flavor and interest to the diet. Eggs also contain excellent protein, iron and phosphorus, easily digested fat and vitamins in significant amounts.

Fats, as butter, fortified oleomargarine, and cream, and the fish oils, provide the fat-soluble vitamins and help to increase the caloric content of the diet. The vegetable oils do not contain vitamins.

Vegetables and fruits are important sources of the minerals and vitamins. They also supply carbohydrate. The adequacy of the diet can be better ensured by the use of foods high in carbohydrate and low in bulk, that do not give too great a feeling of fullness.

White bread and cereals that have been enriched, and whole grain bread and cereals add carbohydrate, contributing to the caloric requirement, and increasing the mineral and vitamin content as well.

Candy and concentrated sweets have a place in the diet, but should be given preferably at the end of a meal so that they may not displace the essential foods.

Beverages such as tea and coffee should never be allowed to replace milk.

Meals:

In acute conditions, where only liquids are given, it may be necessary to give feedings at intervals of one to two hours. Ordinarily, three meals with intermediate feedings will supply the day's requirement. If the intermediate feeding lessens the appetite for the meal, it may be omitted and larger amounts of food taken at meals.

Regular habits of eating and pleasant conditions at meal time help to increase the amount of food eaten. A feeling of hurry tends to lessen the food intake. Rest before and after meals should be considered in relation to the individual patient.

Environmental factors that influence the effectiveness of the diet:

A hygienic routine that provides sufficient amounts of rest and sleep, proper recreation in sunlight, pleasant meal times and freedom from physical and mental strain, is all-important for effective dietetic treatment. Physical defects should be corrected.

When insulin is used, it should be taken only under the direction of a physician and after a careful medical review and a thorough study of the patient's health habits and food intake.

Education of the patient:

With the help of illustrative material, both child and adult should be led to see that food is used for the body's activity, and that rest periods and sleep assist in maintaining a proper balance between the food intake and body activity. They should understand that because of their underweight they must have more rest and sleep and eat larger amounts of food than normal, to allow for storage of adipose tissue.

The achievement of an adequate food intake and proper habits of hygiene should be emphasized as their goal, the increase of weight being but the evidence of accomplishment.

When the child is the patient, the mother must be encouraged to organize the home to meet the child's needs, in recognition of the influence of hygienic living conditions, mental as well as physical, on the successful outcome of the diet. She should guard against habit forming with relation to drinking tea and coffee, lest milk become displaced, and she should encourage the child to eat larger amounts of food and to enlarge his menu, if advisable, by introducing new foods.

Printed material helpful for purposes of visualization and emphasis should be given the patient, and reading matter according to his mentality.

The waiting time for treatment could be used to develop the child's knowledge and application of the principles of health, by giving him attractive materials with which to picture desirable food and health practices.

Abnormal conditions and diseases that may be found in association with underweight:

- Anemia.
- Avitaminosis.
- Cancer.
- Colitis.
- Diabetes.
- Endocrine disturbances.
- Liver disease.
- Lowered resistance to infection.
- Poor posture.
- Psychoneuroses.
- Rheumatic fever.
- Tuberculosis.

OBESITY

DIETARY OUTLINE

Body part affected: Adipose tissue.

Physiology: Normal storage of body tissue to meet the standards of average weight.

Abnormal condition: Excessive deposition of fat due to immoderate food intake or lack of sufficient physical activity, or in many cases to both causes.

Pathological physiology: Impaired function of the endocrine glands.
Hereditary, constitutional obesity or the influence of emotional factors as noted in the literature.

Laboratory data: Routine urine and blood studies as required by a complete medical examination.

Basal metabolism test.

Other studies to determine the presence of endocrine disturbances.

Dietetic treatment: Foods to supply the food constituents in amounts to fulfill body needs and attain desired weight. The normal requirements for protein, minerals and vitamins should be maintained. The caloric value of the intake is reduced so that the body will burn its own adipose tissue. The loss of weight after the first weeks should average one to two pounds per week. There may be periods of no weight loss due to the maladjustment of the water balance.

The food constituents:

Carbohydrate:

Amount: Decreased.

Qualifying factor: Sufficient amounts should be given to avoid acidosis.

Protein:

Amount: Normal.

Qualifying factor: There should be sufficient complete protein.

Fat:

Amount: Decreased.

Qualifying factor: There should be sufficient amounts of the foods that supply vitamin A.

Minerals:

Amount: Normal.

Qualifying factor: When amounts supplied by food are insufficient, which may occur in an extremely low caloric diet, medication should be prescribed.

Vitamins:

Amount: Normal.

Qualifying factor: When amounts supplied by food are insufficient, which may occur in an extremely low caloric diet, medication should be prescribed.

Foods:

Milk and cheese, though rich in fat, are used because they are high in calcium and phosphorus, furnish an excellent quality of protein and the vitamins in varying amounts. Skimmed milk or buttermilk, from which the fat has been removed, may be given and the amount of butter or cream increased proportionately.

Lean meat and poultry are good sources of iron, thiamine, riboflavin and niacin, as well as protein, and do not add appreciably to the fat content of the diet. Lean fish provides a good quality of protein, phosphorus and some of the vitamins, without adding fat. Eggs, although they contain fat, should be used for their valuable contributions of protein, iron and vitamins.

Butter, fortified oleomargarine, and cream supply vitamin A, and the use of butter in particular is advisable but should be restricted to the amount allowed by the diet. Vegetable oils and fats do not carry vitamins.

Vegetables and fruits (5 per cent and 10 per cent carbohydrate) should be used freely. Their caloric value is low, they provide minerals and vitamins and help to satisfy the appetite.

Breads and cereals because of their high carbohydrate content must be carefully prescribed. The whole grain or enriched products should be used for their content of minerals and vitamins.

Sugar and other concentrated sweets, such as jellies, honey and candy should be avoided, as they contain essentially little else than carbohydrate.

Tea and coffee (without cream, milk or sugar) have no food value, and fat-free broth has very little.

Meals:

The number of meals may conform to the usual daily routine of the patient, but the amount of food eaten must be kept within the limits of the food prescription. Intermediate feedings, if taken, should consist of foods with little or no food value; any other food taken must be counted as a part of the food prescription.

Environmental factors that influence the effectiveness of the diet:

Good habits of personal hygiene, physical and mental, should be established.

Exercise beyond the usual amount should be directed by the physician.

The patient should be cautioned concerning the danger of patent reducing machines and medicines. Glandular medication should be taken only under the supervision of the physician.

If the patient has been on a normal diet there will be no increase in the cost of the obesity diet; but if his diet has been inadequate, consisting largely of concentrated carbohydrate foods, with little fruits or vegetables, the addition of these will increase the cost.

Education of the patient:

Pictures and charts should be used to help the patient to contrast his overweight with the normal weight for his height and age, and to realize the excess amount he is carrying. He should be shown, with graph or picture, that the prognosis for health and longevity is less favorable for the obese individual and that reduction in weight would promote health as well as comfort and appearance.

He should understand that his intake of foods supplying fuel should be in accordance with the demands of his activity; that his obesity is due primarily to the intake of larger amounts of fuel foods than his activity requires, the excess being stored in his body as fat. He should see, then, that the purpose of his diet is to limit the food intake, in particular with respect to foods of high fuel value, so that he will use his body fat as well as his food intake to supply his energy requirement.

He should be cautioned that with any reduction in food intake the diet must provide protein, vitamins and minerals in amounts adequate for growth and health.

The fuel value of some of the common foods should be demonstrated to him, especially those of concentrated carbohydrate.

He should be helped to vary his diet through a knowledge of exchanges always keeping within the limits of the diet.

His understanding of the theory of his diet, and his experience in carrying the plan to a successful issue, should enable him always to maintain a proper balance between his food intake and his energy requirements.

Abnormal conditions and diseases that may be found in association with obesity:

Avitaminosis.

Constipation.

Diabetes.

Gall bladder disturbances.

Psychoneuroses.

DIABETES

DIETARY OUTLINE

Body part affected: Islands of Langerhans of the pancreas, in most instances.

Physiology: Secretion of insulin, a hormone which is essential for the utilization of carbohydrate by the tissues and the maintenance of carbohydrate stores in the liver. Secretions of other endocrine glands, notably the thyroid, pituitary and adrenal hormones, have a diabetogenic action which antagonizes the action of insulin.

Pathological physiology: Absolute or relative deficiency of insulin, causing impairment of carbohydrate oxidation and utilization and deficient storage of glycogen. Disturbance of the balance between insulin and the diabetogenic hormones of the thyroid, pituitary and adrenal glands.

Laboratory data: Routine urine and blood studies as required by a complete medical examination.

Special laboratory tests, for diagnosis and treatment:

Urine analysis:

Specific gravity—usually high.

Sugar—present in varying amounts.

Diacetic acid or acetone bodies—denoting acidosis when present.

Albumin—present in renal involvement.

Examination of sediment.

Blood sugar—higher than normal:

Test taken fasting or at a specified time after a meal.

Test for glucose tolerance used to diagnose borderline or mild cases.

Blood Cholesterol:

Usually higher than normal when disease is not under control, or when there are associated diseases involving the metabolism of fat.

Dietetic treatment: For the adult, foods to supply the food constituents in amounts adequate to fulfill body needs and maintain desired weight. It is advisable that the diabetic patient maintain his normal weight, or even remain slightly below normal. When the calorie value of the intake is kept below the normal over a period of time, and the basal metabolic rate lowered thereby, the body's food requirement will be decreased. Carbohydrate is reduced to approximately one-half of the average normal carbohydrate allowance. Protein and fat are usually normal. Children are given a normal diet to maintain desired weight and growth and sufficient insulin to utilize this diet.

The food constituents:*Carbohydrate:*

Amount: Decreased to usually one-half to low normal.

Qualifying factor: When carbohydrate sufficient to help maintain the desired weight is not tolerated, insulin is prescribed. Concentrated sweets are not given, their content of carbohydrate being too readily available.

Protein:

Amount: Normal.

Fat:

Amount: Usually normal.

Qualifying factor: When blood cholesterol remains high in spite of good control of diabetes, a diet low in animal fat is often recommended.

Minerals:

Amount: Normal.

Qualifying factor: If food does not meet the requirements, medication should be given.

Vitamins:

Amount: Normal.

Qualifying factor: If food does not meet the requirements, medication should be given.

Diet for children:

For normal growth and development, children require a normal diet with sufficient insulin to utilize it. Concentrated sweets are not given.

Foods:

Milk or cheese should be included in the diabetic diet since they provide an excellent source of protein, calcium, phosphorus and vitamins. Even though the carbohydrate content of milk is comparatively high, its value in regard to other food constituents makes its use desirable. Cottage cheese and skimmed milk may be used when fat needs to be restricted.

Meat, fish, poultry and eggs add to the protein of the diet and to the mineral and vitamin content in varying amounts. If legumes are used, their high carbohydrate content must be considered.

Butter, fortified oleomargarine and cream provide vitamin A as well as fat. When vegetable oils are used, care must be taken to make adequate provision for vitamin A.

Fruits provide varying amounts of carbohydrate, minerals and vitamins, particularly ascorbic acid. Fruits may be used as purchased, or prepared in salads, in fruit cups, or as fruit juice. They may be prepared with gelatin, or baked or stewed without sugar. Cooked, canned or frozen fruits to which sugar has been added should not be used.

Vegetables provide varying amounts of carbohydrate and add to the mineral and vitamin content of the diet. Vegetables that contain low percentages of carbohydrate are usually given without restriction to help satisfy the patient's appetite. Vegetables that contain appreciable amounts of carbohydrate must be figured in the diet. Potatoes, legumes and other vegetables high in carbohydrate content are used interchangeably with bread or cereal. Vegetables may be used with butter or other fats, in soups, chowders or stews, in sandwiches or salads.

Enriched and whole grain bread and cereal are valuable for their mineral and vitamin content but should not be given in amounts to cause the carbohydrate to exceed the prescription. Other flour products can be used interchangeably with bread and cereal.

Concentrated sweets, such as sugar, honey, jelly, marmalade, jam, conserve, frosting, candy, jelly and soft drinks are excluded from the diet. Ice cream may be given when its food value is estimated in the food prescription.

Special "diabetic foods" are not necessary. There is no advantage in their use because, although they contain very little carbohydrate, their protein content is often increased, sixty per cent of which is converted to carbohydrate in the body.

Meals:

The food prescription should be distributed evenly throughout the day's meals or feedings so as to prevent wide fluctuations in blood sugar levels. Patients receiving protamine zinc insulin should have, in addition to the three meals spaced from five to six hours apart, a small bedtime feeding to prevent hypoglycemia during the night. When globin insulin is being used, an afternoon feeding is advisable.

Environmental factors that influence the effectiveness of the diet:

Good habits of personal hygiene are important. It is essential to guard against infection, and, for this reason, to give proper care to the feet and teeth and to have prompt treatment for "colds" and all skin lesions.

Education of the patient:

The patient should have an understanding of the pathology of his condition, and learn how he can cooperate to the fullest extent in treatment. Whenever possible he should be given printed material to help him to carry out the treatment at home. He should be shown the sizes and amounts of the servings of foods allowed him, so that he can follow his diet without finding it necessary to weigh his food. His knowledge of food exchanges should enable him to vary his diet, and in case of acute illness, to change it to a soft or liquid consistency.

As a check on his diet he should know how to test his urine, and to record the results. He should be able to administer insulin to himself, and in order to safeguard daily treatment another member of the family should be taught the procedure. The patient should be able to recognize the symptoms of an insulin reaction and to know the treatment for it. He should be given an identification card.

He should understand the importance of a careful, hygienic regime, both physical and mental, and the necessity of reporting "colds" and infections promptly to the physician.

Abnormal conditions and disease that may be found in association with diabetes:

- Diabetic retinopathy.
- Hypertensive cardiovascular disease.
- Kidney disease.
- Liver disease.
- Obesity.
- Peripheral neuritis.
- Peripheral vascular disease.
- Skin infections.
- Tuberculosis.
- Underweight.

LIVER DISEASE

DIETARY OUTLINE

Body part affected: The liver.

Physiology: Intermediary metabolism—storage, disintegration, transformation, and redistribution—of the various food constituents, as follows:

Carbohydrate: Storage of glycogen in the liver and formation of glucose as needed by the body, thus regulating the amount of glucose that passes into the blood stream.

Protein: Deamination of amino acids, with formation of ammonium carbonate, the precursor of urea; synthesis of urea; detoxification of harmful end products of protein which enter the blood stream and are excreted by the kidneys. Storage of protein in the liver.

Synthesis of plasma protein.

Fat: Deposition of fat in relation to the amount of glycogen present in the liver. Disinte-

tegration of fat in connection with carbohydrate metabolism. Substances such as choline and methionine inhibit fat deposition.

Minerals: Storage and metabolism of minerals, particularly of iron.

Vitamins: Concerned with the absorption, storage and utilization of the various vitamins.

Carotene is absorbed in the presence of bile and is converted into vitamin A in the liver.

Formation and secretion of bile, which facilitates the digestion and the absorption of carotene in the body, removes waste material from the liver and acts as a regulator of intestinal putrefaction. The principal constituents of bile are mucin, bile salts, bile pigments, (bilirubin and biliverdin), and lipoids (cholesterol, lecithin and other phospholipids).

Secretion into the bile of the products of disintegration of hemoglobin (bilirubin).

Detoxification of harmful products, such as ingested toxic substances and noxious products of metabolism and intestinal putrefaction.

Production of prothrombin.

Pathological physiology: Disturbance of one or several of the above functions as a result of degenerative and inflammatory changes in the cells, alterations in the circulatory system, infections (chronic and acute), toxic processes, disorders caused by diseases of the biliary tract, and tumors, benign and malignant. (See abnormal conditions and diseases that may be found in association with liver disorders). In generalized liver damage, vitamin A storage in the liver is reduced. This deficiency is due to biliary obstruction and failure of absorption of vitamin A or failure of conversion of carotene into vitamin A because of impaired liver function. Thiamine may not be utilized in severe liver damage such as alcoholic cirrhosis. Patients with liver disease sometimes exhibit a bleeding tendency caused by deficient prothrombin formation, resulting from diminished absorption and impaired utilization of vitamin K.

Laboratory data: Routine urine and blood studies as required in a complete medical examination. There is no one test available that will measure all the manifold functions of the liver. The following are special laboratory tests to determine the particular functions of the liver that are impaired.

Tests for the concentration of bile pigments and their derivatives in the blood, urine and stools to determine the presence of jaundice and its type and degree.

Galactose tolerance test to determine the ability of the liver to build glycogen.

Determination of total serum protein and albumin-globulin ratio to learn whether the total protein is low or the ratio reversed, as is often the case in severe liver disease.

Cephalin flocculation and thymol turbidity tests to indicate liver cell damage.

Determination of the urea in the blood to disclose impaired protein metabolism in the liver.

Determination of cholesterol and cholesterol esters to ascertain the ratio between them—a low proportion of esters points to liver cell disease.

Determination of alkaline phosphatase in the serum to detect the presence of biliary passage obstruction.

Determination of prothrombin time to test for impaired prothrombin production.

Hippuric acid test to determine the detoxifying activity of the liver.

Bromsulfalein test to determine the liver's ability to excrete abnormal substances.

Dietetic treatment: Foods to supply the food constituents in amounts adequate to fulfill body needs and maintain the desired weight. Diet therapy is essentially the same in both acute and chronic liver disease. The diet should be bland, non-irritating and non-stimulating. A high caloric intake is usually required to maintain the desired weight.

Carbohydrate and protein are increased above the normal since it has been found that they not only have an immediate therapeutic value but also protect the liver against further damage.

Recent clinical research has revealed that fat, when well tolerated by the patient, need not be sharply restricted as long as carbohydrate and protein are taken in increased amounts. However, when fat is not well tolerated by the patient, as in the early stages of acute liver disease, in biliary obstruction, and in gall bladder disease, it should be restricted.

The vitamins seem to have a protective action for the liver. Therefore, additional vitamins, especially thiamine, riboflavin, and niacin are given to prevent liver cell damage, to

compensate for any loss due to decreased absorption, and for the maintenance of normal liver cell structure and function.

Choline and the amino acid, methionine, are sometimes given as supplementary medication because they inhibit excessive fat deposition in the liver cells.

The food constituents:

Carbohydrate:

Amounts: High normal or increased.

Qualifying factors: It is best that carbohydrate be obtained from natural food sources, particularly fruit and vegetables, rather than from sugar concentrates. The latter decrease appetite and form gas.

Protein:

Amounts: High normal or increased.

Qualifying factors: Proteins of high biological value are preferred.

Fat:

Amounts: Usually low normal or reduced.

Qualifying factors: Fat is given in normal amounts by some authorities when the patient can tolerate it in the diet, and when other food constituents are taken in adequate quantities. Dairy and vegetable fats are the most easily digested.

Minerals:

Amounts: Normal

Qualifying factor: In the presence of ascites or edema, the sodium content of the diet is reduced. (See outline for Cardiovascular Disease).

Vitamins:

Amounts: Increased amounts, particularly of vitamin A, thiamine, riboflavin, and niacin.

Qualifying factor: Medication will be necessary to supplement the diet.

Fluids:

Amounts: Normal

Qualifying factor: In the presence of edema or ascites, fluids need not be limited as long as the sodium content of the diet is reduced.

Foods:

Milk may be used in the diet, both at meal times and between meals. In addition to protein and calcium, milk supplies some fat and is a good source of phosphorus and vitamins. When the fat content of the diet is reduced, skimmed milk may be used in place of whole milk. Milk powders which have been dialyzed free from sodium can be used when the dietary sodium is to be kept low.

Eggs are a good source of protein and vitamins, but some authorities allow no more than one a day because of the high cholesterol content of egg yolk.

Meat, fish and poultry may be used as in the normal diet. Lamb, poultry and tender parts of beef are preferred. Meat should be lean when the fat content of the diet is restricted.

Butter or cream are limited to a greater degree when dietary fat is to be kept low. However, even on a low fat diet, small amounts of butter and vegetable fats—such as corn, cotton seed and olive oils, and oleomargarine and hydrogenated fats manufactured from them—may be allowed, since these fats are the most easily digested.

Vegetables are given in normal amounts for their carbohydrate, mineral and vitamin content. Seed vegetables and the potato make valuable contributions to the protein of the diet. When a gastrointestinal disturbance is associated with the liver disorder, the vegetables given should be of kinds that are easily digested and low in residue (see Peptic Ulcer, p. 202).

Fruits are given in unlimited amounts in diets for acute and chronic disorders, and in hypercholesterolemia. They furnish minerals, vitamins and carbohydrate. Fruit juices may be used for nourishment between meals and help to obviate the necessity of taking abnormal amounts of carbohydrate at meal times.

Breads and cereals increase the vitamin and mineral content of the diet, as well as the carbohydrate and protein. White bread should be vitamin enriched.

Concentrated sweets, while they increase the carbohydrate content of the diet, tend to de-

crease appetite and cause flatulence. Jellies and marmalades may be well tolerated in between-meal feedings and may be permitted only as long as they do not impair appetite. Dextrose and lactose are used in the preparation of foods to help fulfill the high carbohydrate requirements of the diet. Candies are allowed, provided that they neither interfere with the intake of other food constituents nor cause distress.

Salt is omitted from the preparation of the food when dietary sodium is restricted.

Spices, condiments, and food flavorings may be used to increase the palatability of the diet if they do not cause gastrointestinal discomfort.

Coffee and tea should be used in moderation. Alcohol is not permitted.

Meals:

The diet may follow the patient's customary routine. Feedings between meals help fulfill the high carbohydrate and protein requirements.

Education of the patient:

A diagram may be used with which to explain the digestive processes and how the products of digestion are carried to the liver, where they are stored and made ready for use by the body tissues or sent to other organs to be disposed of as waste. Such a diagram will help the patient to realize that every kind of food ingested demands activity on the part of the liver. The patient should understand how his diet will help to compensate for his particular liver disorder. He should be impressed with the importance of keeping within the limits of his diet.

Abnormal conditions and diseases which may be found in association with liver disease:

- Anemias.
- Ascites.
- Avitaminosis.
- Biliary tract diseases.
- Cholecystitis.
- Constipation.
- Febrile diseases.
- Gastrointestinal disturbances.
- Infections.
- Underweight.

CARDIOVASCULAR DISEASE WITH CONGESTIVE HEART FAILURE

Dietary Outline

Body part affected: The heart, the arterial and venous systems, the capillary bed, and the intercellular tissue spaces throughout the body. The kidneys are secondarily involved.

Physiology: The maintenance of a normal rate, volume, and pressure of blood flow throughout the body so as to insure the normal metabolism of all body cells through the following means:

- 1) Maintenance of the fluid content of the cells and of the intercellular tissue spaces.
- 2) Transportation of oxygen from the lungs to the tissues, and of carbon dioxide from the tissues to the lungs.
- 3) Transportation of nutritive materials from the gastrointestinal tract to the tissues.
- 4) Removal of waste products from the tissues.
- 5) Regulation of body temperature.
- 6) Transportation of regulatory substances (such as the secretions of the ductless glands) and protective substances (antibodies, antitoxins, etc.)

Pathological physiology: In congestive heart failure, the rate of blood flow decreases, back pressure in the venous circulation rises, and the oxygen supply to all tissues is diminished.

Cardiac failure alters the delicate balance between the intravascular and extravascular fluid compartments.

Abnormal amounts of water and sodium chloride (salt), of which sodium is the important element, are retained in the extravascular tissue spaces. This retention is clinically apparent as edema. In some cases, the edema may be latent, manifest only as a gain in body weight which cannot be explained on the basis of increased caloric intake. Water and salt can be held in the tissues only as a solution of constant, physiological strength. As long as sodium

salts are freely available, the excess water will be retained. When the amount of available sodium is reduced, either by dietary restriction or increased renal excretion of sodium, the excess water is eliminated and edema tends to disappear.

Laboratory data: Routine urine and blood studies as required in a complete medical examination.

Urine:

Volume: Decreased below fluid intake.

Reaction: Variable.

Albumin: Slight to large amounts.

Specific gravity: Variable.

Microscopic examination: Casts and a few red blood cells may be present.

Determination of urinary chlorides—markedly reduced when salt intake is restricted.

Twenty-four hour fluid intake and urinary output—recorded when indicated.

Body weight: Should be checked at regular intervals.

Blood chemistry: Sodium and chlorides should be maintained at normal levels. A decrease contraindicates the continuance of a low salt diet.

Non-protein nitrogen—may rise if there is marked impairment of renal function.

Circulatory dynamics:

Venous pressure—elevated.

Circulation time—prolonged.

Electrocardiogram and chest X-ray when indicated.

Dietetic treatment: Foods to supply the normal body requirements and to maintain the desired weight. Obesity should be corrected by the reduction of the caloric intake since it places an added burden on the heart.

Dietary sodium is markedly reduced, not only by the omission of sodium chloride from the preparation of the food, but also by the restriction or omission of foods which contain large quantities of sodium salts in their natural state.

In some cases, according to individual opinion, a diet which yields a neutral or acid ash is advised, since this increases the excretion of sodium in the urine. Supplementary medication in the form of acid salts is sometimes administered (for the same reason).

Water intake need not be reduced below normal as long as sodium is sharply restricted. Some authorities feel that the ingestion of large quantities of water is beneficial because of its diuretic effect.

The food constituents:

Carbohydrate:

Amount: Normal to high normal.

Qualifying factor: The protein-sparing action of carbohydrate can be utilized when the diet is low in protein.

Protein:

Amount: Low normal

Qualifying factor: When the sodium intake is kept at the lowest levels, animal protein is restricted because of its high sodium content.

Fat:

Amount: Normal

Qualifying factor: Fats with low sodium content are used.

Minerals:

Amount: Normal, except for *sodium*, which is reduced to a level dependent upon the degree of edema, the response to treatment, and the opinion of the individual physician. Sodium: 200–800 milligrams (equivalent to 0.50–2.01 grams of sodium chloride*).

Qualifying factor: The patient must be watched carefully for signs of salt depletion, particularly if there is impairment of renal function.

*Method of conversion: $\frac{\text{Sodium}}{\text{Sodium chloride}} = \frac{23}{58.5}$

Vitamins:

Amount: Normal.

Qualifying factor: Medication is usually necessary to fulfill the normal requirements.

Fluids:

Amount: Normal

Qualifying factors: Restriction is not necessary as long as sodium is reduced. Fluids containing appreciable amounts of sodium must be calculated in the sodium allowance.

Foods:

Milk is restricted because of its high sodium content and alkaline ash. As a rule, not more than one cup a day is allowed. This amount includes milk used in the preparation of made dishes. On minimal sodium diets, it is necessary to omit milk entirely in order to meet the dietary prescription. Milk powders which have been dialyzed free from sodium however, may be used freely in place of whole milk, thus insuring provision of essential food constituents.

Eggs may be used as in the normal diet, but their sodium content—which is high—must be calculated in terms of the daily sodium allowance. Eggs may be served in a variety of combinations which can be used to great advantage in improving the palatability of the diet, such as eggnog, omelet, salads and salad dressing. Salt is, of course, omitted in all preparations.

Meat, fish or poultry may be consumed in low normal quantity, with the limitation that all must be unsalted. Animal protein contains a large amount of sodium and must be restricted in minimal sodium diets. Smoked, salted, dried, canned or pickled meat, fish and poultry are forbidden. Fresh shellfish, although high in sodium content, may occasionally be included in very small quantity. Oysters, however, have no more sodium per unit weight than meat or chicken, and can therefore be used for extension of the diet.

Butter should be unsalted. Small quantities of cream may be allowed to increase the palatability of the diet, but cheese—with the exception of unsalted cottage cheese—is not permitted.

Fruit may be included as in the normal diet, with preference for the citrus fruits because of the ascorbic acid they supply. Almost all fruits yield an alkaline ash. When a neutral or acid ash diet is desired, servings of alkaline-yielding fruits should be balanced with servings of acid ash fruits such as plums, prunes and cranberries. Although the fruit may be prepared in any form (fresh, frozen, stewed or canned), it should be noted that fruits commercially canned or frozen often contain added sodium compounds as preservatives.

Vegetables leave an alkaline residue, and some, such as beets, beet greens, celery and spinach, are high in sodium. However, they are essential because of mineral and vitamin value. Vegetables should be limited to those containing the least sodium and producing the lowest alkaline ash. Salt is not used in the preparation. Commercially canned vegetables are omitted when they have added salt.

Cereals: Cooked cereals, prepared without salt, are to be preferred. Enriched cream of wheat contains more sodium than the more slowly cooking farina. Of the prepared cereals, puffed wheat, shredded wheat and puffed rice are permissible, but all-bran, corn-flakes, rice flakes, and wheat flakes are especially high in sodium.

Bread: All bread should be prepared without salt. When salt-free bread cannot be purchased, it can be baked at home. Certain salt-free crackers, such as Uneda crackers (unsalted) and matzoth, may be used as bread substitutes.

Desserts: The patient must forego foods in which baking powder, baking soda, or salt are included in the recipe. Desserts, such as the following, may be used when prepared without salt or soda:

Fruit pies made with unsalted crust

Cornstarch pudding made with low sodium milk

Ice cream made with low sodium milk

Gelatin desserts made with plain gelatin, fruits and juices. (Do not use prepared gelatin desserts.)

Ices made with fruit juices

Sponge cake

Fruit tapioca pudding

Brown Betty

Nuts and sweets: In a diet where the accustomed savor of the food is so sharply curtailed, unsalted nuts and certain candies may be used to provide a pleasant variation in the menu. Hard candies, candy-coated unsalted nuts, peppermints and candied fruits are permissible. Those candies which ordinarily contain a significant amount of salt in the recipe may be included if they are homemade, with salt omitted in their preparation. Molasses and corn syrup contain appreciable amounts of sodium and should be avoided.

Pickles and relishes: All commercial pickles and relishes contain a large amount of salt and must be omitted. However, foods preserved at home with distilled vinegar and white sugar are permitted. The following fruits and vegetables may be pickled, whole or in halves or sliced: cucumbers, tomatoes, onions, carrots, cabbage, peaches, pears, crab-apples and grapes. The following relishes are allowed: cucumber sweet pickles, pickled sweet red peppers, pickled Seckel pears, ginger pears, pickled citron, spiced currants, spiced plums, pickled peaches or pears, cranberry catchup, grape catchup, horseradish.

Flavoring: Salt-free mayonnaise, unsalted French dressing, vinegar, lemon juice or garlic may be used, and are important because they add to the tastiness of the food. All extracts for flavoring such as almond, lemon and vanilla are permitted. Salt substitutes are now available if desired, but they must first be checked for sodium content. Only those which contain no sodium are allowed. Salt substitutes containing lithium are not recommended.

Meals: The number of meals may follow the customary routine of the patient provided that the kinds and amounts of food conform to the food prescription.

Environmental factors that influence the effectiveness of the diet:

Adequate rest and avoidance of fatigue and emotional strain are especially important.

Food should be served as attractively as possible and in pleasant surroundings so as to promote an easier acceptance of the rigors of the diet. Taste habits must be adjusted to the lack of salt in foods. It is hoped that the patient can learn to enjoy foods that are unsalted.

Education of the patient:

The patient should be taught, in simple terms, the basic physiology and pathological physiology behind the therapeutic regime. An explanation of the importance of the restriction of sodium will help to obtain his fullest cooperation. He should learn what sodium is, its relation to salt (sodium chloride) and how sodium is calculated in his intake. The meaning of "gram" and "milligram" should be clearly defined. With this information, the patient can use the sodium tables (pp. 158) and make his own food exchanges.

Since diets low in sodium are often unattractive to the patient, every effort should be made to increase the palatability of the diet. The patient should be given low-sodium recipes and suggestions for the use of flavorings other than salt.

Abnormal conditions and diseases that may be found in association with congestive heart failure:

Acute infections.

Asthma.

Congenital defects.

Coronary artery disease.

Generalized arteriosclerosis.

Gastrointestinal disturbances.

Hypertension.

Liver disease.

Lues.

Nephritis.

Peripheral vascular disease.

Rheumatic fever.
Rheumatic heart disease.
Vitamin deficiency.

NEPHRITIS

DIETARY OUTLINE

Body part affected: The kidneys.

Physiology: Excretion of the end products of protein metabolism. The kidneys also take part in the control of body water balance and acid-base equilibrium.

Pathological physiology: In *acute nephritis*, the end products of protein metabolism are not excreted as well as normally. Water elimination is impaired, and the urinary output decreases markedly. Generalized edema, which is the result of water and sodium retention in the tissues, may be present. Cardiac failure not infrequently complicates acute nephritis and increases the tendency toward edema formation.

In *chronic nephritis*, the kidney loses its concentrating powers and, therefore, puts out a larger volume of urine in order to excrete nitrogenous waste products adequately. The blood pressure is elevated, and cardiac failure, with edema, may ensue in the terminal stages.

Uremia (the retention of nitrogenous waste products in the body) may occur in both acute and chronic nephritis. There is a depletion of the alkaline reserve as a result of the failure of the kidney to maintain the proper acid-base balance. Retention of phosphates may also occur, with a resultant fall in serum calcium.

In the *nephrotic stage* of nephritis, plasma proteins are depleted through the loss of great amounts of protein in the urine. The lowered colloid osmotic pressure of the plasma causes the retention of water and sodium salts in the tissue spaces. This retention is clinically apparent as edema.

Laboratory data: Routine urine and blood studies as required in a complete medical examination.

Urine analysis:

Volume: variable; reduced in acute stages; greater increase above normal shown at night than during the day in chronic type.

Reaction—increased acidity.

Protein—slight to large amounts.

Specific gravity—variable; lowered with decreased renal function.

Microscopic examination—cells, casts, or bacteria may be present.

Phenolsulphonphthalein test—to show impairment of kidney function.

Urea or other clearance tests—to show degree of renal impairment.

Blood:

Erythrocyte count and hemoglobin—anemia often present.

Retention of end products of protein metabolism, shown by increased non-protein nitrogen and urea.

Chlorides—increased in some types of nephritis.

Total protein and albumin-globulin ratio—total protein may be low, and albumin-globulin ratio reversed.

Dietetic treatment: Foods to supply the food constituents in amounts adequate to fulfill body needs.

In general, the protein should not exceed the normal plus the amount that is lost in the urine. In acute nephritis and in chronic nephritis when renal function is impaired, protein should be restricted to the minimum amount necessary to achieve nitrogen balance.

An increase in carbohydrate or fat, particularly carbohydrate, makes it possible to maintain nitrogen balance when protein is below normal levels because of the protein-sparing action of these food constituents. Carbohydrate rather than fat is more often increased since it spares protein more effectively.

When edema is present, dietary sodium is sharply restricted. Blood and urine chemistries must be checked at frequent intervals, however, whenever renal function is impaired, since patients with renal failure are very susceptible to salt depletion.

Vitamins should be increased above normal because the nephritic patient is subject to vita-

min deficiencies, especially when low sodium and low protein diets are prescribed. Supplementary vitamins are more often necessary than not.

When there is oliguria or anuria, the fluid intake is restricted to basic body needs. When urinary output is not diminished, there is no need to restrict fluids.

A diet yielding an acid or neutral ash is desirable in the treatment of edema in the absence of uremia. An alkaline ash is preferable with uremia and depleted alkaline reserve.

The food constituents:

A. Acute nephritis.

Carbohydrate:

Amount: Normal or increased

Qualifying factor: liberal amounts should be given because it spares body protein more effectively than fat.

Protein:

Amount: Low normal or decreased below normal, sometimes as low as 0.5 Gm./Kilo.

Qualifying factor: Some physicians restrict animal protein to a minimum.

Fat:

Amount: Normal

Qualifying factor: Amount should be adequate to fulfill body needs for maintaining the desired weight.

Minerals:

Amount: Normal

Qualifying factor: In the presence of edema, sodium is markedly reduced, usually to 400 mg. or less (equivalent to 1 Gm. of sodium chloride). (See outline for Cardiovascular Disease.) On this regime, the patient must be watched carefully for signs of salt depletion.

Vitamins:

Amount: Increased.

Qualifying factor: Supplementary medication must usually be given to meet the requirements.

Fluids:

Amount: Usually restricted.

Qualifying factor: Amount is dependent upon previous day's output of urine. When urinary output returns to normal, fluids need not be restricted.

B. Chronic nephritis.

Carbohydrate:

Amount: Normal or increased.

Qualifying factor: Liberal amounts should be given when protein is reduced because carbohydrate has a protein-sparing action.

Protein:

Amount: Normal or decreased.

Qualifying factor: Amounts prescribed depend upon the theory held by the individual physician. As a rule, a normal protein intake is allowed when renal function is adequate. When it is impaired, or when there is nitrogen retention, protein is reduced below normal, sometimes to as low as 0.5 Gm./Kilo.

Fat:

Amount: Normal

Qualifying factor: Amount should be adequate to fulfill body needs for maintaining the desired weight.

Minerals:

Amount: Normal

Qualifying factor: In the presence of edema, sodium is restricted, usually to 400 mg. or less (equivalent to 1 Gm. of sodium chloride). The patient must be

checked frequently for evidence of salt depletion. In uremia, when there is phosphate retention, dietary phosphorus should be reduced.

Vitamins:

Amount: Normal

Qualifying factor: If sufficient amounts are not supplied by the food, medication should be prescribed.

Fluids:

Amount: Increased.

Qualifying factor: Controlled by output of urine.

C. **Nephritis of the nephrotic type.**

Carbohydrate:

Amount: Normal or increased.

Qualifying factor: If patient is unable to tolerate a high protein diet, or when dietary fat is reduced, carbohydrate must be increased to fulfill the caloric requirement and spare protein.

Protein:

Amount: High normal or increased.

Qualifying factor: If patient is unable to ingest an adequate amount of protein, supplementary salt-poor protein concentrates may be prescribed by the physician.

Fat:

Amount: Decreased

Qualifying factor: A low fat diet is thought by some to effect a reduction of blood cholesterol.

Minerals:

Amount: Normal, except for *sodium*, which is restricted to an amount dependent upon the degree of edema, the response to treatment, and the opinion of the individual physician. (See outline for Cardiovascular Disease, p. 213).

Qualifying factor: The patient must be watched for signs of salt depletion.

Vitamins:

Amount: Normal

Qualifying factor: If sufficient amounts are not supplied by the food, medication must be prescribed.

Fluids:

Amount: Normal

Qualifying factor: Fluids need not be restricted as long as sodium is sharply reduced. Some authorities believe that an increased fluid intake is helpful.

Foods:

Milk: At least one-half pint daily is necessary to approximate the calcium requirement without the use of medication. When the amount of protein given is decreased below normal, the calcium requirement cannot be fulfilled in the diet. When sodium is restricted, milk powder which has been dialyzed free from sodium may be used. In addition to protein, milk supplies some fat and is a good source of vitamins and phosphorus. If there is phosphate retention, phosphorus absorption may be prevented by adding aluminum hydroxide to the milk. Cream contains, besides fat, an appreciable amount of protein, calcium, phosphorus and vitamin A. When cream is diluted by the addition of water to the consistency of milk, it may be used to advantage when the protein content in the diet is to be decreased.

Meat, fish or eggs may be used as in the normal diet except when limited because of the restriction in protein. When protein is low, care must be taken to fulfill iron and vitamin requirements.

Butter, cream and oleomargarine are concentrated fats and contribute Vitamin A to the diet. Cream contains protein, where butter and oleomargarine contain no appreciable amount. Vegetable fats, such as corn, cottonseed and olive oils are easily digested and may also

be used. When the sodium is restricted in the diet, salt-free butter or butter washed salt-free may be used.

Vegetables, except potatoes and dried legumes, contain only small amounts of protein. They are good sources of minerals and vitamins. The soy bean is useful as a vegetable source of protein of high biological value.

Fruits and fruit juices add minerals and vitamins as well as carbohydrate to the diet, but they contain no appreciable protein.

Whole grain or enriched bread and cereal are good sources of minerals and of some vitamins, but they contain an appreciable amount of protein. This must be carefully evaluated in the diet, especially if the protein is restricted. Cereal and bread, combined with milk, provide protein of satisfactory biological value. Bread should be salt-free when sodium is restricted in the diet.

Sugar, syrups, cornstarch and tapioca are concentrated carbohydrate without protein. They lack minerals and vitamins.

Salt must be omitted from the preparation of all food when a low sodium diet is prescribed.

Flavorings such as herbs, spices, garlic, lemon and vinegar may be used with ingenuity to increase the palatability of the diet when sodium or protein is restricted.

For a more detailed discussion of the food restrictions necessary for an adequate reduction of dietary sodium, see the outline for Cardiovascular Disease, p. 213.

Meals:

Meals may be taken at habitual times, provided that the daily food intake fulfills the food prescription.

Environmental factors that influence the effectiveness of the diet:

Good habits of personal hygiene, both physical and mental, are important.

Education of the patient:

The patient should have an understanding of the normal functions of the kidneys to be able to recognize the fallacy of some popular beliefs concerning them. He should know that, except in the acute stage, protein foods may be used as in the normal diet and are not harmful or destructive. In particular, the misconception concerning "red" meat should be corrected.

The patient should realize that, in observing the protective diet, he will have an alkaline ash diet. In the use of "acid therapy" (the neutral or acid ash diet plus acid salts), the content of acid and alkaline ash-forming foods should also be explained.

In edematous conditions, the reason for the restriction of sodium chloride should be explained, the content and preparation of food should be described and recipes given.

The patient should be given lists of foods to meet the requirements of the diet and, again, recipes for the preparation of food. The size of servings should be given—in particular, protein exchanges—when the protein content of the diet is increased or decreased.

The patient should understand the importance of guarding against infections and colds.

Abnormal conditions and diseases that may be found in association with nephritis:

Anemia.

Cardiovascular Diseases.

Retinitis.

PREGNANCY AND LACTATION

DIETARY OUTLINE

Body part affected: Maternal and fetal tissues.

Physiology: Normal functioning of the maternal organism adjusted to meet the requirements of the developing fetus. There is an increased demand on the maternal metabolism by the presence of the fetus. During lactation, the demands on the mother's body are even greater, since the food requirements of the infant increase as the baby gains weight and becomes more active.

Laboratory data: Routine urine and blood studies as required in a complete medical examination. Routine urine analysis at frequent intervals to determine whether the kidneys function normally and to detect the presence of sugar.

Dietetic treatment: Foods to supply the food constituents in amounts adequate to fulfill the body needs of the mother and the developing fetus and to maintain the desired body weight. It may be necessary to increase the caloric value of the intake after the fourth month. During the latter half of pregnancy, there is also an increased need for protein. A greater than normal intake of calcium, iron, vitamin A, thiamine, riboflavin, niacin, ascorbic acid and vitamin D is necessary to provide for normal fetal growth and to prevent maternal and fetal deficiencies in these food constituents. During lactation, even greater amounts of protein, minerals and vitamins are required.

The food constituents:

A. Normal.

Carbohydrate:

Amount: Normal.

Qualifying factor: Carbohydrate is usually better tolerated than fat.

Protein:

Amount: Normal or increased

Qualifying factor: The protein intake should be increased to at least high normal during the latter half of pregnancy (1.5 grams per kilo).

Fat:

Amount: Normal

Minerals:

Amount: Increased, Calcium—1.5 grams; Phosphorus—1.5 grams; Iron—15 milligrams.

Qualifying factor: If sufficient amounts are not supplied by the food, medication should be prescribed.

Vitamins:

Amount: Increased, Vitamin A—6000 I.U.; Thiamine—1500 micrograms; Riboflavin—2500 micrograms; Niacin—15 milligrams; Ascorbic acid—100 milligrams; Vitamin D—400 I.U.

Qualifying factor: If sufficient amounts are not provided by the food, medication should be prescribed.

Fluid:

Amount: Normal, 6-8 glasses.

B. Pernicious vomiting.

Carbohydrate:

Amount: Increased.

Qualifying factor: Carbohydrate is usually better tolerated than fat. It is desirable that the patient should have a liberal glycogen reserve.

Protein:

Amount: Normal

Fat:

Amount: Normal or decreased.

Qualifying factor: Frequently fat is not well tolerated. When the carbohydrate is increased the fat may be decreased to keep the calories at the normal requirement.

Minerals:

Amount: Increased, Calcium—1.5 grams; Phosphorus—1.5 grams; Iron—15 milligrams.

Qualifying factor: If sufficient amounts are not provided by food, medication should be prescribed.

Vitamins:

Amount: Increased, Vitamin A—6000 I.U.; Thiamine—1500 micrograms; Riboflavin—2500 micrograms; Niacin—15 milligrams; Ascorbic Acid—100 milligrams; Vitamin D—400 I.U.

Qualifying factor: If sufficient amounts are not provided by food, medication should be prescribed.

Fluid:

Amount: Decreased.

Qualifying factor: Given in smallest possible amounts between feedings. Parenteral administration is sometimes necessary to meet the body demands.

C. Toxemia of Pregnancy.

Carbohydrate:

Amount: Normal

Qualifying factor: Carbohydrate has a protein-sparing action.

Protein:

Amount: Normal

Qualifying factor: Many authorities believe that a protein intake comparable to that in a normal pregnancy is not harmful in toxemia of pregnancy. When there is pre-existing or primary kidney disease, the protein intake may be adjusted according to the type of renal involvement (See Nephritis, p. 217). Protein must be adequate to maintain positive nitrogen balance.

Fat:

Amount: Normal

Qualifying factor: Fat is not so well tolerated as carbohydrate.

Minerals:

Amount: Calcium, phosphorus, and iron are increased as in the normal pregnancy. The sodium intake is markedly reduced in the presence of edema (See Outline for Cardiovascular Disease, p. 213).

Vitamins:

Amount: Increased, Vitamin A—6000 I.U.; Thiamine—1500 micrograms; Riboflavin—2500 micrograms; Niacin—15 milligrams; Ascorbic Acid—100 milligrams; Vitamin D—400 I.U.

Qualifying factor: If sufficient amounts are not provided by food, medication should be prescribed.

Fluid:

Amount: Normal.

Qualifying factor: In the presence of edema, water is allowed as in the normal diet, provided that sodium is restricted. Fluids which contain appreciable amounts of sodium should be calculated in the daily sodium allowance.

D. Lactation.

Carbohydrate:

Amount: Increased. More carbohydrate than that required during pregnancy is usually necessary to fulfill the increased caloric needs for lactation.

Protein:

Amount: Increased to 2 grams per kilo.

Fat:

Amount: Normal.

Minerals:

Amount: Increased, Calcium—2.0 grams; Phosphorus 2.0 grams; Iron—15 milligrams.

Qualifying factor: If sufficient amounts are not provided by food, medication should be prescribed.

Vitamins:

Amount: Increased, Vitamin A—8000 I.U.; Thiamine—1500 micrograms; Riboflavin—3000 micrograms; Niacin—15 milligrams; Ascorbic acid—150 milligrams; Vitamin D—400 I.U.

Fluid:

Amount: Normal.

Foods:

Milk: At least one quart daily during pregnancy and one and one-half quarts during lactation are necessary to meet the requirements of calcium and phosphorus without the use of

medication. Milk also provides protein of excellent quality and easily utilized carbohydrate and fat, and it is a good source of vitamins. Milk which has been enriched in its vitamin D content is to be preferred. An ounce of American cheese contains approximately the same amount of calcium and phosphorus as one cup of milk. Milk powders which have been dialyzed free from sodium may be used when sodium is restricted. When the caloric intake is to be reduced, skimmed milk and buttermilk may be used, but their content of vitamins A and D is negligible because of the removal of fat. If milk is not tolerated, calcium medication must be prescribed.

Egg, meat, fish and chicken are good sources of iron and of protein of high biological value, and should therefore be consumed in liberal quantity. If these foods are restricted because of kidney disease, it is difficult to fulfill the iron requirement by food, and medication must be prescribed.

Butter, fortified oleomargarine and cream contain a liberal amount of vitamin A, but their fat content must be evaluated in the fulfillment of the food prescription.

Vegetables and fruits provide minerals and vitamins, and carbohydrate in varying amounts. They are valuable also for their laxative properties.

Whole grain and enriched breads and cereals provide carbohydrate as well as minerals and vitamins. When the caloric value of the intake is restricted, only moderate amounts of these foods can be used.

Salt is omitted from the preparation of all foods when sodium is restricted. For a more detailed description of a low sodium diet, see Outline for Cardiovascular Diseases, p. 213.

Meals:

The number of meals may follow the established routine of the patient provided all the foods are used that are required to fulfill the food prescription. In the last two or three months of pregnancy, four or five small meals are often more satisfactory in relation to appetite and digestion. In cases of pernicious vomiting, six or seven small meals are often better tolerated than three large ones, and fluids are omitted or limited at meal time and given in small amounts between meals. Feedings between meals are often necessary during lactation to meet the food requirements.

Environmental factors that influence the effectiveness of the diet:

Good habits of personal hygiene, mental and physical, are especially important. Emotional strain should be avoided. Exercise should be taken as directed by the physician.

Education of the patient:

The patient should understand the extra demand upon her body for caring for the growth and development of the fetus. She should also realize that, during lactation, she is still supplying food from her own body for the infant's ever increasing needs. She should understand her need for increased amounts of minerals and vitamins over the amounts supplied by the protective diet for normal needs, and the adjustment of fuel foods necessary, for maintenance of desired weight.

She should appreciate the importance of milk, as well as the vegetables and fruit, as carriers of calcium, phosphorus and the vitamins, and should be given recipes for the use of milk. She should be encouraged to add new foods, if needed, and given lists of food exchanges for varying the diet, always maintaining proper food values.

She should realize that her diet is a protection to her own health, as well as to that of the fetus, and that it helps her to maintain proper weight and safeguards her from conditions of obesity, dental decay, constipation, acidosis and anemia.

She should appreciate the importance of a careful hygienic regime, mental and physical, and the saving of mental and physical strain to be gained by conserving time and energy.

Abnormal conditions and diseases that may be found in association with pregnancy:

- Acidosis.
- Anemia.
- Avitaminosis.
- Constipation.
- Dental caries.
- Glycosuria.

Hypertension.
Iodine deficiency.
Kidney disturbances.

VITAMIN A DEFICIENCY

DIETARY OUTLINE

Body part affected: Entire body in terms of growth; Eyes; Skin; Mucous membrane of gastro-intestinal and respiratory tracts; Teeth and bones; Questionable relation to organs of reproduction and lactation.

Physiology: Essential for growth and health at all ages. Maintains healthful condition of the skin and the mucous membrane of the gastro-intestinal and respiratory tracts and thus makes them more resistant to disease. Acts with calcium to build teeth. Promotes normal vision; especially important for vision in dim light as it helps to restore the visual purple which is a compound of vitamin A and a protein. Most of the vitamin is stored in the liver. The change from carotene to vitamin A takes place in the liver.

Pathological physiology: Mild deficiency—Retarded growth in children; Listlessness; Lowered resistance to infection, especially of the mucous membranes; Increased incidence of respiratory infection; Inflammation and infection of gastro-intestinal tract; Dryness and scaliness of the skin; Night blindness.

Extreme deficiency—Ophthalmia (xerophthalmia, conjunctivitis, keratomalacia); Urinary and gall bladder calculi are still questionable; Sterility.

Contributing factors: Faulty food habits.

Reduction in food intake due to self directed or prescribed dietary restrictions when not supplemented by medication.

Impairment of appetite.

Food idiosyncrasies.

Inadequate income.

Lack of knowledge concerning the value of vitamin A.

Insufficient availability of food containing vitamin A.

Destruction of the vitamin by oxidation and prolonged heat in preparation and storage.

Certain factors affecting the absorption, such as an excess of mineral oil, chronic diarrhea, pancreatic dysfunction, celiac disease or sprue.

Lack of certain amount of fat which prevents the absorption.

Diseases of any part of the gastro-intestinal tract.

Incapacity of the liver to convert carotene into vitamin A.

Chronic infections.

Laboratory data: Dark-adaptation test.

Biomicroscopic examination of conjunctivae under slit lamp illumination.

Blood test for determination of the amount of vitamin A and carotene.

Test for Diagnosis: Diagnosis is aided by a knowledge of the diet, clinical response to vitamin A, and close clinical observation.

Dietetic treatment: A normal diet includes the amount of vitamin A needed as recommended by the National Research Council Committee on Food and Nutrition and is also sufficient in all the other food constituents. However, when there are symptoms of vitamin A deficiency the amount should be increased by food through careful selection of foods high in vitamin A content. If the deficiency is extreme, the diet cannot supply sufficient amounts and it will need to be supplemented by medication. In dietetic treatment the conservation of vitamin A in food preparation and storage must be given consideration as the loss is affected by oxidation and prolonged heat.

The food constituents:

Carbohydrate:

Amount: Normal.

Qualifying factor: Limit carbohydrate foods low in vitamin content so that sufficient foods containing vitamin A can be used.

Protein:

Amount: Normal.

Fat:

Qualifying factor: Special attention should be given to choosing fats that carry vitamin A.

Minerals:

Amount: Normal.

Vitamins:

Amount: Increase of vitamin A. Normal amount of other vitamins and an increase of the amount if other conditions require it.

Qualifying factor: If sufficient amounts of vitamin A are not provided by food, medication should be prescribed.

Foods:

Milk and cheese that have the fat retained should be given in liberal amounts for their valuable contribution of vitamin A. Skim milk and cottage cheese made from skim milk, due to their lack of fat, have no vitamin A content.

Eggs should be used in any form for the vitamin A content of the yolks.

Glandular organs are high in vitamin A content. Muscle meats contain insignificant amounts of the vitamin.

Fish liver oils furnish vitamin A in liberal amounts and for this reason are used in medication. Labels on the containers should be consulted for the vitamin A content.

Butter should be used liberally in the diet as it is an excellent source of vitamin A. Its content of vitamin A varies in different seasons, according to the feed of the animal. Oleomargarine that has been fortified with sufficient amounts of vitamin A may be used in place of butter. Vegetable oils and fats if not fortified are poor sources of the vitamin.

Vegetables, particularly the green leafy and yellow vegetables should be used liberally as they are, with certain exceptions, good sources of carotene, the precursor of vitamin A. In conditions where the fat must be lowered, lessening the vitamin A content, the vegetable sources of vitamin A may be used toward the required allowance.

Fruits: Fresh yellow fruit such as cantaloup and peaches, and the dried apricots and prunes contain valuable amounts of vitamin A. Care should be taken in the preparation of fruits and vegetables that the vitamin is not lost.

Cereal grains and nuts are poor sources of vitamin A.

Meals:

Meals may be adjusted to the established routine of the patient, or adjusted to the prescription of the doctor if related diseases exist, but must provide all the vitamins necessary to fulfill the food prescription.

Environmental factors that influence the effectiveness of the diet:

Good habits of hygiene are important.

Knowledge and consideration of food values helps to prevent the deficiency.

The vitamin A content of the diet may be affected by various social factors including nationality, income, food outside the home, preparation and choice of food, availability of food, and mental attitude concerning food.

Education of the patient:

The patient should be taught the food values of the foods and particularly the good sources of vitamin A, the purpose of vitamin A in the body, and the amount needed.

The patient should know how to plan the food for the day and the methods of buying, preparing and serving the foods to best retain the vitamin.

The patient should know the food value of exchanges so that he can substitute one food for another.

Attention should be called to the danger of extreme reduction of fats from the diet in an effort to lose weight.

The importance of reading labels should be shown, to learn the amount of the vitamin present in foods, such as oleomargarine that has been fortified with vitamin A.

Abnormal conditions and diseases that may be found in association with Vitamin A deficiency:

Chronic diarrhea.
 Chronic infections.
 Constipation.
 Diseases of the liver.
 Diseases of the respiratory tract.
 Gastro-intestinal disorders.
 Obesity.
 Other avitaminoses.
 Underweight.

THIAMINE DEFICIENCY**DIETARY OUTLINE**

Body part affected: Entire body in terms of growth and carbohydrate metabolism: The gastro-intestinal tract; Muscles: The nervous system; The heart; Organs of reproduction and lactation.

Physiology: Part of a co-enzyme system; Essential to the metabolism of carbohydrates; Essential to the proper nutrition and function of the nervous and muscular systems, contributing to good muscle tone; Maintains and stimulates the appetite; Aids the regular bowel movement; Essential for growth, reproduction and lactation.

Pathological physiology: Mild deficiency—Muscular weakness; Ease of fatigue; Vague generalized aches and pains; Loss of weight; Disturbances of the central nervous system—fretfulness, irritability; Peripheral neuritis; Digestive disturbances—indigestion, constipation; Loss of appetite; Faulty carbohydrate metabolism which produces toxicity; Circulatory disturbances.

Extreme deficiency—Beri-beri; Polyneuritis with edema; Wasting; Impaired lactation; Mental changes; Sterility is still questionable.

Contributing factors: Faulty food habits.

Reduction in food intake due to voluntary or prescribed dietary restrictions when not supplemented by medication.

Impairment of appetite.

Food idiosyncrasies.

Inadequate income.

Lack of knowledge concerning the value of thiamine.

Destruction of the vitamin through improper preparation of food.

Need for daily intake as thiamine is not stored in the body.

Interference with absorption due to excessive use of alcohol or alkali or to such conditions as diarrhea.

High carbohydrate in the diet, increasing the need of thiamine.

Extensive use of refined foods that have not been enriched with thiamine.

Laboratory data: Estimation of thiamine in the urine by biological or chemical methods.

Measurement of intermediate products of carbohydrate metabolism in blood.

Test for diagnosis: Diagnosis is aided by knowledge of the diet and close clinical observation.

Dietetic treatment: A normal diet includes the amount of thiamine needed as recommended by the National Research Council Committee on Food and Nutrition as well as sufficient of all the other food constituents. However, when there are symptoms of thiamine deficiency the amount should be increased through careful selection of foods high in thiamine content. If the deficiency is extreme and the diet cannot supply sufficient amounts it will need to be supplemented by medication. In dietetic treatment the conservation of thiamine in food preparation must be given careful consideration in view of the ease with which thiamine is affected by heat, oxygen, solubility in water and alkalinity.

The food constituents:

Carbohydrate:

Amount: Normal.

Qualifying factor: Limit carbohydrate foods low in thiamine content so that sufficient foods containing thiamine can be used.

Protein:

Amount: Normal.

Fat:

Amount: Normal.

Minerals:

Amount: Normal.

Vitamins:

Amount: Increase of thiamine. Normal amount of other vitamins, and an increase of the amount if other conditions require it, particularly of the vitamins that are included in the "B complex".

Qualifying factor: If sufficient amounts of thiamine are not provided by food, medication should be prescribed.

Foods:

Milk should be given as in the normal diet, for its important contribution to the total thiamine requirement. Other dairy products—cheese and eggs—contain thiamine in moderate amounts, but as they are commonly used they aid in meeting the requirement.

Meat, and especially lean pork, heart, liver and kidney, contribute relatively important amounts of thiamine to the diet.

Fruits, particularly the orange and banana should be used for their thiamine content.

Vegetables, particularly the leafy vegetables, are good sources of thiamine. The legumes, including lentils, dried peas, beans and soy beans, are outstanding sources of the vitamin.

Breads and cereals which are whole grain or enriched with thiamine should be used in the diet.

Nuts and peanut butter are also good sources of thiamine.

Meals:

Meals may be adjusted to the established routine of the patient, or adjusted to the prescription of the doctor if related diseases exist, but must provide all the vitamins necessary to fulfill the food prescription.

Environmental factors that influence the effectiveness of the diet:

Good habits of hygiene are important.

Knowledge and consideration of food values help to prevent the deficiency.

The thiamine content of the diet may be affected by nationality, income, food outside the home, organization of meal time, preparation and choice of food, availability of food and mental attitude concerning food.

Education of the patient:

The patient should be taught the food values of the foods, and particularly the good sources of thiamine, the purpose of thiamine in the body and the amount of thiamine needed, particularly in view of the relative difficulty in obtaining a diet adequate in thiamine.

The patient should know how to plan the food for the day and the methods of buying, preparing and serving the foods to best retain the vitamin.

The patient should know the food value of exchanges so that he can substitute one food for another. This is especially important in thiamine as there is no one food to ensure the daily requirement, such as is true of some other vitamins.

Attention should be called to the importance of reading labels to know the amount in foods as well as in vitamin concentrates.

The patient should be acquainted with the value of enriched breads and cereals.

Abnormal conditions and diseases that may be found in association with thiamine deficiency:

Anorexia due to physical condition.

Chronic alcoholism.

Chronic debilitating diseases.

Diabetes.

Gastro-intestinal diseases.

Other avitaminoses.

RIBOFLAVIN DEFICIENCY

DIETARY OUTLINE

Body part affected: Entire body in terms of growth; Body cells; Skin; Eyes; Tongue.

Physiology: Promotes growth; Helps to keep the skin healthy; Essential for transportation of oxygen to the cells; Helps eyesight; Concerned with carbohydrate metabolism; Exerts sparing action on thiamine; Part of one of the essential enzyme systems.

Pathological physiology: Burning and itching sensations of eyes; Microscopic changes in eye as seen with slit lamp; Lesions of mucous membranes and skin; Inflammation of lips; Fissures at the corner of the mouth (cheilosis); Smoothness of tongue; Nervous depression; General weakness and lowering of body tone; Diminished luster and loss of hair; Increased susceptibility to certain infections; Expectancy of life shortened; Digestive disturbances; Anorexia; Retardation of growth; Loss of weight.

Contributing factors: Faulty food habits.

Reduction in food intake due to self directed or prescribed dietary restrictions when not supplemented by medication.

Impairment of appetite.

Food idiosyncrasies.

Inadequate income.

Lack of knowledge concerning the value of riboflavin.

Destruction of the vitamin, as it deteriorates when exposed to sunlight.

Loss of the vitamin due to solubility in water.

Faulty absorption or utilization of food due to disorders of gastro-intestinal tract or chronic alcoholic addiction.

Increased requirement during periods of rapid growth in children, during pregnancy and lactation, hyperthyroidism and fevers which increase the metabolic needs.

Test for diagnosis: Diagnosis depends upon recognition of characteristic lesions and symptoms, and is aided by a knowledge of the diet.

Dietetic treatment: A normal diet includes the amount of riboflavin needed as recommended by the National Research Council Committee on Food and Nutrition and is also sufficient in all the other food constituents. However, when there are symptoms of riboflavin deficiency the amount should be increased by careful selection of foods high in riboflavin content. If the deficiency is extreme, the diet cannot supply sufficient amounts and it will need to be supplemented by medication. In dietetic treatment the conservation of riboflavin in food preparation must be given consideration as the loss is affected by solubility in water and exposure to sunlight.

The food constituents:

Carbohydrate:

Amount: Normal.

Protein:

Amount: Normal.

Fat:

Amount: Normal.

Minerals:

Amount: Normal.

Vitamins:

Amount: Increase of riboflavin. Normal amount of other vitamins and an increase in amount if other conditions require it, particularly an increase of the vitamins that are included in the "B complex".

Qualifying factor: If sufficient amounts of riboflavin are not provided by food, medication should be prescribed.

Foods:

Milk should always be included in the diet as the recommended riboflavin cannot be met by

food without the amount of milk prescribed in the normal diet. Cheese and eggs also give valuable contributions to the riboflavin content of the diet.

Meat that is lean, and particularly liver, is an important source of riboflavin.

Fruits that are dried are fair sources of riboflavin, but fruits should be given as in the normal diet for their contribution of other food constituents.

Vegetables, particularly the green leafy and seed vegetables, are valuable sources of riboflavin.

Breads and cereals which are whole grain should be used in the diet. At present only some breads and cereals are enriched with riboflavin.

Meals:

Meals may be adjusted to the established routine of the patient, or adjusted to the prescription of the doctor if related diseases exist, but must provide all the vitamins necessary to fulfill the food prescription.

Environmental factors that influence the effectiveness of the diet:

Good habits of hygiene are important.

Knowledge and consideration of food values help to prevent the deficiency.

The riboflavin content of the diet may be affected by various social factors including nationality, income, food outside the home, organization of meal time, preparation and choice of food, availability of food and mental attitude concerning food.

Education of the patient:

The patient should be taught the food values of the foods, and particularly the good sources of riboflavin, the purpose of riboflavin in the body, and the amount of riboflavin needed.

The patient should know how to plan the food for the day and the methods of buying, preparing and serving the foods to best retain the vitamin.

The patient should know the food value of exchanges so that he can substitute one food for another.

Attention should be called to the importance of reading labels to know the amount of the vitamin in foods as well as in vitamin concentrates.

Abnormal conditions and diseases that may be found in association with riboflavin deficiency:

Anemia.

Other avitaminoses.

NIACIN DEFICIENCY**DIETARY OUTLINE**

Body part affected: Skin; Gastro-intestinal tract: Mucous membrane; Nervous system; Other body cells.

Physiology: Necessary to keep tissues normal and healthy through normal cell metabolism; Part of one of the essential enzyme systems.

Pathological physiology: Mild deficiency—Loss of appetite; Loss of weight; General muscular weakness; Irritability; Depression; Memory loss; Headache; Insomnia; Dermatitis; Soreness and burning of mouth and tongue; Functional disorders of the gastro-intestinal tract, including indigestion and diarrhea.

Extreme deficiency—Pellagra.

Contributing factors: Faulty food habits.

Reduction in food intake due to self directed or prescribed dietary restrictions when not supplemented by medication.

Impairment of appetite.

Food idiosyncrasies.

Inadequate income.

Lack of knowledge concerning the value of niacin.

Insufficient availability of food containing niacin.

Destruction of niacin through improper preparation of food.

Diseases of the gastro-intestinal tract.

Alcoholism.

Test for diagnosis: Knowledge of the diet necessary for diagnosis: Results of therapeutic trial helpful.

Dietetic treatment: A normal diet includes the amount of niacin needed as recommended by the National Research Council Committee on Food and Nutrition and is also sufficient in all the other food constituents. However, when there are symptoms of niacin deficiency the amount should be increased through careful selection of foods high in niacin content. If the deficiency is extreme, the diet cannot supply sufficient amounts and it will need to be supplemented by medication. In dietetic treatment the conservation of niacin in food preparation must be given consideration as the loss is affected by solubility in water.

The food constituents:

Carbohydrate:

Amount: Normal

Protein:

Amount: Normal

Fat:

Amount: Normal

Minerals:

Amount: Normal

Vitamins:

Amount: Increase of niacin. Normal amount of other vitamins and an increase in amount if other conditions require it, particularly an increase of the vitamins that are included in the "B complex".

Qualifying factor: If sufficient amounts of niacin are not provided by food, medication should be prescribed.

Foods:

Milk, cheese and eggs should be included as in the normal diet, although of slight value to the niacin content of the diet.

Meat and chicken are good sources of niacin. Liver and salmon are particularly high in the vitamin.

Fruits are negligible sources of niacin but should be included in the diet for their contribution of other vitamins and minerals.

Vegetables, particularly the green leafy vegetables, dried beans, lentils and soy beans are valuable sources of niacin.

Breads and cereals that are whole grain or enriched are good sources of niacin. Yeast furnishes niacin in such liberal amounts that it is often used as medication.

Peanuts and peanut butter contain niacin in significant amounts.

Meals:

Meals may be adjusted to the established routine of the patient, or adjusted to the prescription of the doctor if related diseases exist, but must provide all the vitamins necessary to fulfill the food prescription.

Environmental factors that influence the effectiveness of the diet:

Good habits of hygiene are important.

Knowledge and consideration of food values help to prevent the deficiency.

The niacin content of the diet may be affected by nationality, income, food outside the home, organization of meal time, preparation and choice of food, availability of food, and mental attitude concerning food.

Education of the patient:

The patient should be taught the food values of the foods and particularly the good sources of niacin, the purpose of niacin in the body, and the amount of niacin needed.

The patient should know how to plan the food for the day and the methods of buying, preparing and serving the foods to best retain the vitamin.

The patient should know the food value of exchanges so that he can substitute one food for another.

Attention should be called to the importance of reading labels to know the amount in foods as well as in vitamin concentrates.

The patient should be acquainted with the value of enriched breads and cereals.

Abnormal conditions and diseases that may be found in association with niacin deficiency:

Anemia.

Chronic alcoholism.

Chronic diarrhea.

Mental disorders.

Other avitaminoses (particularly thiamine and riboflavin).

Stomatitis.

ASCORBIC ACID DEFICIENCY

DIETARY OUTLINE

Body part affected: Teeth and bones; Gums; Connective tissue; Capillaries: Entire body in terms of growth.

Physiology: Helps to build and maintain the strength of the walls of the capillaries; Essential for normal development and nutrition of bones, teeth and gums; Essential for normal growth; Essential for maintaining integrity of connective tissue.

Pathological physiology: Mild deficiency—Irritability; Loss of appetite; Failure of wound healing; Indolent ulcers; Vague digestive disorders; Lack of stamina; Lowered resistance to infections; Retarded growth; Various pathological conditions involving tissue metabolism; Decalcification of bones and teeth; Lesions of gums; Development of so-called rheumatism; Damage to heart muscle; Degeneration of muscle structure (diminished muscular power); Latent scurvy; Injury to sex organs; Hemorrhages anywhere in the body.

Extreme deficiency—Scurvy.

Contributing factors: Faulty food habits.

Food idiosyncrasies.

Inadequate income.

Sensitivity to certain foods which may contribute to an inadequate ascorbic acid intake.

Insufficient availability of food containing ascorbic acid.

Loss of the vitamin in preparation as it is destroyed by oxidation, heat, alkalinity, solubility and improper methods of storage and handling.

Increased metabolism (such as infections and fevers) which increases the need of the vitamin.

Relatively small store of ascorbic acid maintained in the body.

Laboratory data: Determination of ascorbic acid excretion in urine.

Determination of ascorbic acid concentration in blood.

"Load" or saturation test.

Capillary resistance test.

Test for diagnosis: Radiographic studies. Diagnosis is aided by a knowledge of the diet and close clinical observation.

Dietetic treatment: A normal diet includes the amount of ascorbic acid needed as recommended by the National Research Council Committee on Food and Nutrition and is also sufficient in all the other food constituents. However, when there are symptoms of ascorbic acid deficiency the amount should be increased through careful selection of foods high in ascorbic acid content. If the deficiency is extreme, the diet cannot supply sufficient amounts and it will need to be supplemented by medication. In dietetic treatment the conservation of ascorbic acid in food preparation must be given consideration as the loss is affected by oxidation, heat, solubility and alkalinity.

The food constituents:

Carbohydrate:

Amount: Normal

Qualifying factor: Limit carbohydrate foods low in ascorbic acid content so that sufficient foods containing ascorbic acid can be used.

Protein:

Amount: Normal

Fat:

Amount: Normal

Minerals:

Amount: Normal

Vitamins:

Amount: Increase of ascorbic acid. Normal amount of other vitamins and an increase in amount if other conditions require it.

Qualifying factor: If sufficient amounts of ascorbic acid can not be provided by food, medication should be prescribed.

Foods:

Milk, cheese, eggs and other dairy products are poor sources of ascorbic acid. However, they are such good sources of the other food constituents that they should be included as in the normal diet.

Fruits, particularly the citrus fruits, are outstanding sources of ascorbic acid and should be used generously in the diet. The canned and frozen fruits retain their ascorbic acid content.

Vegetables, particularly raw vegetables and the tomato, raw or cooked, are good sources of ascorbic acid. Most vegetables lose a large per cent of their content of ascorbic acid in the process of cooking.

Meals:

Meals may be adjusted to the established routine of the patient, or adjusted to the prescription of the doctor if related diseases exist, but must provide all the vitamins necessary to fulfill the food prescription.

Environmental factors that influence the effectiveness of the diet:

Good habits of hygiene are important.

Prevention of the deficiency is possible through knowledge and consideration of food values.

The ascorbic acid content of the diet may be affected by various social factors including nationality, income, food outside the home, preparation and choice of food, availability of food and mental attitude concerning food.

Education of the patient:

The patient should be taught the food values of the foods and particularly the good sources of ascorbic acid, the purpose of ascorbic acid in the body and the amount needed.

The patient should know how to plan the food for the day and the methods of buying, preparing and serving the foods to best retain the vitamin.

The patient should know the food value of exchanges so that he can substitute one food for another.

Abnormal conditions and diseases that may be found in association with ascorbic acid deficiency:

Anemia.

Dental caries.

Other avitaminoses.

RICKETS

DIETARY OUTLINE

Body part affected: The skeletal structure. Many authorities also include the teeth and the blood.

Physiology: Adequate utilization of calcium and phosphorus for proper development of the skeletal structure, and for proper concentration and ratio in the blood either in the prenatal period or in infancy.

Pathological physiology: Faulty metabolism of calcium and phosphorus.

Contributing factors: Dietary deficiency,—insufficient amounts or abnormal interrelationship of calcium, phosphorus and vitamin D.

Lack of sunshine:

Climate and season.

Habitation.

Interfering media, such as dust or smoke, fog, clouds, clothes, windows.

Race pigmentation affecting utilization of the ultra-violet rays.

Laboratory data: Routine urine and blood studies as required in a complete medical examination.

Radiographic studies to determine the extent of the damage done to the skeletal structure.

Chemical analysis of the blood for calcium and phosphorus content.

Studies of electrical conductivity.

Dietetic treatment: Foods to supply the food constituents in amounts adequate to fulfill body needs and maintain desired weight. Vitamin D must be increased in sufficient amounts to correct the disturbed mineral metabolism.

The food constituents:

Carbohydrate:

Amount: Normal.

Protein:

Amount: Normal.

Fat:

Amount: Normal.

Minerals:

Amount: Normal.

Qualifying factor: If amounts supplied by food are inadequate, medication should be prescribed.

Vitamins:

Amount: Normal, plus increase of vitamin D.

Qualifying factor: Medication, under the direction of the physician, is given in the form of ultra-violet light from sunlight or a "sun lamp," fish liver oils ("bottled sunshine"), irradiated sterols, or milk and other foods that are irradiated to serve as carriers of vitamin D.

Foods:

Milk (one quart per day) supplies sufficient calcium and phosphorus for the normal requirements of the child. Its content of vitamin D is low but can be increased by various methods depending upon the producer. The three principal ways of increasing the vitamin D content of milk are:

- (1) exposing milk directly to the rays of an ultra-violet lamp,—irradiated milk;
- (2) adding vitamin D concentrates, such as fish liver oil, to the milk;
- (3) feeding the cow irradiated yeast, which is rich in vitamin D,—usually called metabolized milk.

From 135–400 International Units of vitamin D can be added to a quart of milk by these methods and the amount contained can be learned by reading the labels.

Meat, fish and chicken afford no protection from rickets. They supply efficient protein, fat, minerals in varying amounts and vitamins—muscle meat being a good source of iron, thiamine, riboflavin and niacin, while the glandular organs contain vitamin A as well. Both meat and fish are high in phosphorus.

Egg yolk is of protective value in rickets in that it is a source of vitamin D as well as of calcium and phosphorus. It is also rich in iron. The white of the egg contains only protein and has no antirachitic value.

Butter, an excellent source of vitamin A, has only a slight vitamin D content. Fish liver oils are excellent sources of vitamin D, but vegetable oils, unless irradiated, do not contain it.

Vegetables and fruits supply minerals and vitamins but are poor sources of vitamin D.

Whole grain or enriched cereals add to the mineral content of the diet. Some authorities consider that when cereals are given in too large amounts they disturb the normal metabolism of calcium.

Sweets may have a place in the diet but should not be allowed to displace foods containing essential food constituents.

Meals:

Meals may follow the routine to which the patient is accustomed, provided all the food necessary to fulfill the food prescription is taken. With younger children it may be desirable to give several small meals rather than three large ones.

Environmental factors that influence the effectiveness of the diet:

Good habits of personal hygiene should be established.

Sufficient sunlight, shining directly on the bare skin of the infant and growing child, is an important factor in the prevention and treatment of rickets. Sun bathing is as beneficial on the city roof as at the beach. During the winter the sun bath can be given indoors at an open window. The child's clothing and covering are important considerations, as the ultraviolet ray does not penetrate many kinds of material.²

Education of the patient:

The mother should be aware of the factors that are the primary causes of rickets. She should appreciate the importance to childhood of giving these careful consideration and be helped so far as possible to obviate them.

She should know what the ultra-violet rays of sunlight are and their value to the body, and how to adapt clothing, and housing and climatic conditions to secure their beneficial effects. She should understand the interrelationship of calcium, phosphorus and vitamin D in the development of the skeletal structure, and the importance of milk as a carrier of these food constituents. She should be informed concerning the vitamin D value of fish liver oils, and of irradiated foods, especially milk, as substitutes for sunlight or to supplement it. Her understanding of these considerations should help her to appreciate the protection against rickets afforded by the protective diet with the addition of sunlight and other sources of vitamin D.

Abnormal conditions and diseases that may be found in association with rickets:

Anemia.

Other avitaminoses.

Increased susceptibility to pneumonia and other infections in infants, as reported by some authorities.

Malnutrition.

Organic or functional disturbances in adult life, especially pelvic and oral bone malformation.

Retarded dentition.

Tetany.

² Definite directions for sun baths are given by the Children's Bureau, U. S. Department of Labor, Folder No. 5, 1931.

PART IV

TYPICAL DIETS AND MENUS

FOREWORD

In this part a series of typical diets, both normal and therapeutic, primarily for the use of the ambulatory patient, is arranged in the order followed in the Dietary Outlines (Part III). The therapeutic diets are seen to be a modification of the normal diet, constructed on the basis summarized in Part I, Chapter 3, p. 34. Throughout these diets, the figures for body weight and the daily food requirements of the body are those stated in the "Summary of Body Requirements in Terms of Food Constituents" (Part I, Chapter 1, p. 6). When any of the therapeutic diets are inadequate in minerals or vitamins, medication must be prescribed.

The same foods are listed under each therapeutic diet. They are the foods used in the normal diet computed in Part I, Chapter 2, p. 14 to p. 17 to fulfill the food prescription given in Part I, Chapter 1, p. 6. Any change required in them to meet the needs of the various diseases can be easily observed. In this way

again, necessary modifications from the normal diet are emphasized. This presentation will also show how the foods of the family meal can be utilized with few changes or modifications.

It should be understood that these diets are *suggestive and not arbitrary*. They can be varied in many ways with the help of the tables of exchanges (Tables 28-51) and the table of racial foods and food habits (Table 4).

Opposite the page of each diet will be found a meal plan and menus based on the computation of the typical diet. *These again are not an arbitrary arrangement, but are to suggest* how the foods required in the diet can be prepared and utilized in meals, in various combinations. The heavy meal for children is planned for noon time. The menus are arranged on the basis of two levels of cost,—moderate and liberal.

NORMAL
TYPICAL DIET
(ADULT)

Average Body Weight, 70 Kgm.

Foods	Amounts		Grams						Milli-grams	I.U.	Micrograms			Milligrams		I.U.
	Household Measure	Grams	Car-bohy- drate	Pro- tein	Fat	Cal- cium	Phos- pho- rus	Iron	Vita- min A	Thia- mine	Ribo- flavin	Nia- cin	Ascor- bic Acid	Vita- min D		
Milk	2 c.	480	24.0	16.8	18.8	0.566	0.446	0.3	768	192	816	0.48	4	10		
Cheese, American	2 T.	30	0.5	7.0	9.7	0.262	0.183	0.2	522	12	150	0.06				
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45		
Meat, fish, or poultry																
Beef	4 oz.	120		22.0	21.6	0.012	0.236	3.2		132	168	5.88				
Cream, light	$\frac{1}{2}$ c.	60	2.4	1.6	12.0	0.056	0.048		500	20	84	0.08		8		
Butter	6 t.	30			24.0	0.006	0.006		990		2	0.02				
Mayonnaise	3 t.	15	0.5		11.0	0.002	0.005	0.1	29	6	6			3		
Fruit																
10 per cent—orange	1 sm.	100	11.2	1.0	0.2	0.033	0.023	0.4	190	80	30	0.20		49		
15 per cent—apple	1 m.	150	22.5	0.5	0.6	0.009	0.015	0.5	135	60	30	0.30		8		
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.028	0.6	430	90	60	0.60		10		
Vegetables																
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1,100	60	40	0.60		23		
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07		7		
10 per cent—string beans	1 s. d.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60		19		
10 per cent—carrots	1 s. d.	100	9.3	1.2	0.3	0.039	0.037	0.8	12,000	70	60	0.50		6		
Potato	1 m.	150	28.7	3.0	0.2	0.017	0.084	1.1	30	165	60	1.80		26		
Bread, white, enriched	3 sl.	90	48.0	7.5	1.8	0.051	0.030	1.8		216	126	1.98				
whole wheat	2 sl.	60	28.8	5.8	2.2	0.036	0.240	1.6		168	90	1.96				
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.28				
Crackers	2	12	9.0	1.2	1.2	0.002	0.012	0.2		4						
Cereals																
Rolled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33				
Macaroni, cooked	$\frac{3}{4}$ c.	150	22.0	4.0	0.4	0.007	0.043	0.4		39	24	0.63				
Sugar	9 t.	45	45.0						4	4	8	0.06				
Jelly	6 t.	40	26.0	0.1		0.006	0.004	0.1								
Desserts																
Cake, plain	3" sq.		42.7	3.3	7.0	0.032	0.053	0.4	315	31	60	0.22				
Gelatin	$\frac{1}{4}$ T.	3		1.7												
Beverages										20	6	1.12				
Coffee, soluble	2 t.	2														
Bouillon	$\frac{1}{2}$ can	156	4.7	8.1												
Totals of the Food Constituents			386.8	102.0	119.7	1.283	1.874	16.5	18,753	1768	2173	17.82	152	66		

Total Calories 3034

NORMAL
TYPICAL DIET
(ADULT)
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Fruit Cereal Milk Cream Sugar Egg (bacon if desired) Bread or toast, white, enriched Butter Jelly Beverage Cream Sugar	Orange, 1 small Rolled oats, 1 sauce dish Milk, $\frac{1}{2}$ cup Sugar, 2 teaspoons Egg, soft cooked, 1 Toast, enriched, 2 slices Butter, 1 teaspoon Jelly, 2 tablespoons Coffee Cream, 1 tablespoon Sugar, 2 teaspoons	Orange juice, 1 orange, small Shredded wheat, 1 biscuit Strawberries, 10 Cream, 2 tablespoons Egg, poached, 1 Muffins, 2 small Butter, 1 teaspoon Marmalade, 2 tablespoons Coffee Cream, 1 tablespoon Sugar, 2 teaspoons
Noon	Main dish Cereal or potato Cheese, egg, or milk Vegetables, cooked or in salad Bread, whole wheat Butter Dessert Fruit, pudding, or cake Beverage	Macaroni and cheese Macaroni, $\frac{3}{4}$ cup Cheese, 2 tablespoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Tomato and lettuce salad Tomato, 1 Lettuce, 3 leaves Mayonnaise, 1 tablespoon Bread, whole wheat, 2 slices Butter, 1 teaspoon Baked apple with cream Apple, 1 medium Sugar, 2 teaspoons Cream, 1 tablespoon Milk, 1 glass	Creamed chicken and mush- rooms in macaroni ring Macaroni, $\frac{3}{4}$ cup Chicken, diced, $\frac{1}{2}$ cup Mushrooms, diced, 2 table- spoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Stuffed tomato salad Tomato, 1 Lettuce, 3 leaves Celery, chopped, 2 table- spoons French dressing, 1 table- spoon Rolls, 2 Butter, 1 teaspoon Apple Snow Apple, 2 tablespoons Egg white, $\frac{1}{2}$ Sugar, 2 teaspoons Milk, 1 glass
Night	Soup Crackers Meat, fish, or poultry Potato or cereal Vegetables, cooked or in salad Bread, white, enriched Butter Dessert Fruit, cake, pudding, pastry, or gelatin Beverage	Bouillon Crackers, 2 Pot Roast Baked potato, 1 medium Butter, 1 teaspoon String beans, buttered, 1 sauce dish Carrots, buttered, 1 sauce dish Butter for vegetables, 1 teaspoon Bread, enriched, 1 slice Butter, 1 teaspoon Fruit gelatin with cream Banana, $\frac{1}{2}$ medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 3 teaspoons Cream, 1 tablespoon Cake, plain, 1 piece Coffee Cream, 1 tablespoon Sugar, 2 teaspoons	Consomme Crackers, 2 Sirloin steak Parsley potato balls Potato, 1 large Parsley, chopped, 1 tea- spoon Butter, 1 teaspoon Carrots, glazed Carrots, 1 sauce dish Sugar, 1 teaspoon Butter, 1 teaspoon Hearts of escarole Roquefort cheese dressing, 1 tablespoon Roll, 1 Butter, 1 teaspoon Milk fruit sherbet, 6 heaping tablespoons Fruit juice, 4 tablespoons Sugar, 2 teaspoons Milk, $\frac{1}{2}$ cup Cup cake, 1 Coffee Cream, 1 tablespoon Sugar, 2 teaspoons

NORMAL
TYPICAL DIET
(CHILD)

Male. Age, 9 Years. Average Body Weight, 26 Kgm.

Foods	Amounts		Grams						Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy- drate	Pro- tein	Fat	Cal- cium	Phos- pho- rus	Iron	Vita- min A	Thia- mine	Ribo- flavin	Nia- cin	Ascor- bic Acid	Vita- min D	
Milk	4 c.	960	48.0	34.0	38.0	1.132	0.892	0.7	1,536	384	1632	0.96	8	20	
Cheese	1 T.	15	0.3	3.5	4.9	0.131	0.092	0.1	261	6	75	0.03			
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45	
Meat, fish, or poultry															
Beef	2 oz.	60		11.0	10.8	0.006	0.118	1.6		66	84	2.94			
Cream															
Butter	3 t.	15			12.0	0.003	0.003		495		1	0.01			
Mayonnaise	1 t.	5	0.2		3.7	0.001	0.002		10	2	2			1	
Fruit															
10 per cent—orange	1 sm.	100	11.2	1.0	0.2	0.033	0.023	0.4	190	80	30	0.20	49		
15 per cent—apple	1 m.	150	22.5	0.5	0.6	0.009	0.015	0.5	135	60	30	0.30	8		
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.028	0.6	430	90	60	0.60	10		
Vegetables															
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1,100	60	40	0.60	23		
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7		
10 per cent—string beans	1 s. d.	100	7.7	2.4	0.2	0.065	0.004	1.1	630	80	100	0.60	19		
10 per cent—carrots	1 s. d.	100	9.3	1.2	0.3	0.039	0.037	0.8	12,000	70	60	0.50	6		
Potato	1 sm.	100	19.1	2.0	0.1	0.011	0.056	0.7	20	110	40	1.20	17		
Bread, white, enriched	3 sl.	90	48.0	7.5	1.8	0.051	0.090	1.8		216	126	1.98			
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.28			
Crackers															
Cereals															
Rolled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33			
Macaroni, cooked	½ c.	75	11.0	2.0	0.2	0.004	0.022	0.2		20	12	0.32			
Sugar	5 t.	25	25.0												
Jelly	3 t.	20	13.0			0.003	0.002	0.1	2	2	4	0.03			
Desserts															
Cake, plain	3" sq.		42.7	3.3	7.0	0.032	0.053	0.4	315	31	60	0.22			
Gelatin	¼ T.	3		1.7											
Beverages															
Bouillon															
Totals of the Food Constituents			311.8	84.9	88.3	1.602	1.714	12.7	18,234	1596	2609	11.22	147	66*	

Total Calories 2382

* Below the normal.

NORMAL
TYPICAL DIET (CHILD)
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Fruit Cereal Milk Sugar Egg Bread, white, enriched Butter Milk	Orange, 1 small Rolled oats, 1 sauce dish Milk, $\frac{1}{2}$ cup Sugar, 1 teaspoon Egg, soft boiled, 1 Toast, 1 slice Butter, $\frac{1}{2}$ teaspoon Jelly, $1\frac{1}{2}$ teaspoons Milk, 1 glass	Orange juice, 1 orange Shredded wheat, 1 biscuit Milk, $\frac{1}{2}$ cup Sugar, 1 teaspoon Strawberries, 10 Bacon, 2 strips Toast, 1 slice Butter, $\frac{1}{2}$ teaspoon Jelly, 3 teaspoons Milk, 1 glass
Noon	Meat, fish, or poultry Potato or cereal Vegetables Bread, white, enriched Butter Dessert Milk	Pot Roast, small serving Baked potato, 1 small String beans, 1 sauce dish Carrots, 1 sauce dish Butter, $\frac{1}{2}$ teaspoon Bread, 1 slice Butter, $\frac{1}{2}$ teaspoon Fruit Gelatin Banana, 1 medium Gelatin, $\frac{1}{2}$ tablespoon Sugar, 2 teaspoons Cake, plain, 1 medium piece Milk, 1 glass	Sirloin steak, small serving Buttered macaroni Macaroni, $\frac{3}{8}$ cup Butter, 1 teaspoon String beans, 1 sauce dish Carrots, 1 sauce dish Butter, $\frac{1}{2}$ teaspoon Bread, 1 slice Butter, $\frac{1}{2}$ teaspoon Milk fruit sherbet, 4 heaping tablespoons Fruit juice, 4 tablespoons Sugar, 2 teaspoons Milk, $\frac{1}{2}$ cup Cup cake, 1 very small Milk, 1 glass
Night	Main dish Cereal or potato Cheese, egg, or milk Vegetables, cooked or in salad Salad dressing Bread, white, enriched Butter Fruit Milk	Macaroni and cheese Macaroni, $\frac{3}{8}$ cup Cheese, grated, 2 table- spoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Tomato and lettuce salad Tomato, 1 medium Lettuce, 3 leaves Salad dressing, 1 teaspoon Bread, 1 slice Butter, $\frac{1}{2}$ teaspoon Jelly, $1\frac{1}{2}$ teaspoons Baked apple Apple, 1 medium Sugar, 2 teaspoons Milk, 1 glass	Egg in fluffy potato nest Egg yolk, 1 Egg white, 1 beaten Potato, 1 small, com- bined with egg white Stuffed tomato salad Tomato, 1 small Lettuce, 3 leaves Celery, 2 tablespoons Salad dressing, 1 teaspoon Roll, whole grain, 1 Butter, $\frac{1}{2}$ teaspoon Apple snow Apple, 2 tablespoons Sugar, 2 teaspoons Egg white, $\frac{1}{2}$ Milk, 1 glass

ALLERGY
TYPICAL DIET

(ADULT)

Average Body Weight, 70 Kgm.

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy-drate	Pro-tein	Fat	Cal-cium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Nia-cin	Ascor-bic Acid	Vita-min D
**Milk														
**Cheese														
**Egg														
Meat, fish, or poultry														
Beef	6 oz.	180		33.0	32.4	0.018	0.344	4.8		198	252	8.82		
Cream, heavy	$\frac{3}{4}$ c.	160	5.0	3.2	56.5	0.117	0.085	0.1	2645	43	213	0.21		43
Butter	6 t.	30			24.0	0.006	0.006		990		2	0.02		
**Mayonnaise														
Oil	3 t.	15			15.0									
Fruit														
10 per cent—orange	1 sm.	100	11.2	1.0	0.2	0.033	0.023	0.4	190	80	30	0.20		49
10 per cent—grapefruit	$\frac{1}{2}$ m.	100	10.0	0.5	0.2	0.017	0.018	0.3		40	20	0.20		40
**15 per cent—apple														
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.028	0.6	430	90	60	0.60		10
Vegetables														
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60		23
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07		7
**10 per cent—carrots														
10 per cent—string beans	1 s. d.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60		19
Peas, dried	4 T.	60	37.0	14.8	0.6	0.044	0.238	3.6	222	522	174	1.80		
**Potato, white														
Potato, sweet	1 m.	150	42.0	2.7	1.1	0.045	0.074	1.1	7500	150	90	1.10		33
**Bread, whole wheat														
Cornmeal mush, cooked	$\frac{3}{4}$ c.	160	22.2	2.7	1.1	0.033	0.083	0.9	153	135	81	1.08		
**Flour, wheat														
Crackers														
**Wheat														
Ry-Krisps	6	42	30.0	4.8		0.024	0.150	1.8		126	90	0.90		
Cereals														
Rolled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33		
**Macaroni														
Rice, brown, cooked	1 hp. s. d.	180	23.3	2.3	0.5	0.012	0.091	1.7		87	15	1.38		
Sugar	5 t.	25	25.0											
Jelly	3 t.	20	13.0			0.003	0.002	0.1	2	2	4	0.03		
Desserts														
**Cake, plain														
Gelatin	$\frac{1}{4}$ T.	3		1.7										
Beverages														
Bouillon	$\frac{1}{2}$ can	156	4.7	8.1										
Totals of the Food Constituents			278.5	84.7	134.4	0.471*	1.351*	18.6	14,402	1837	1233*	17.94	181	43
Total Calories 2662														

* Below the normal.

** Forbidden foods.

ALLERGY
TYPICAL DIET
(ADULT)
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Fruit Cereal Cream Sugar Bread Butter Beverage Sugar Cream	Orange, 1 small Rolled oats, 1 sauce dish Cream, 2 tablespoons Sugar, 1 teaspoon Corn meal mush, 2 small cakes Butter, 1 teaspoon Coffee, 1 cup Sugar, 1 teaspoon Cream, 2 tablespoons	Rice Krispies, 1 sauce dish Cream, 2 tablespoons Sugar, 1 teaspoon Blueberries, 4 tablespoons Corn meal mush, 2 small cakes Butter, 1 teaspoon Syrup, 2 teaspoons Coffee, 1 cup Sugar, 1 teaspoon Cream, 2 tablespoons
Noon	Soup Vegetable allowed Main dish Fish, small portion Vegetable, cooked or in salad Bread Butter Dessert Fruit gelatin Beverage Sugar Cream	Pea soup Peas, 4 tablespoons Water, 1 cup Cream, 2 teaspoons Butter, 1 teaspoon Salmon loaf Salmon, 4 tablespoons Rice, 3 tablespoons Cream, 1 teaspoon Butter, 1 teaspoon Lettuce and tomato salad with dressing Lettuce, 1 leaf Tomato, 1 medium Oil allowed, 1 tablespoon Ry-Krisps, 4 Butter, 1 teaspoon Fruit gelatin with cream Banana, 1 medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 1 teaspoon Cream, 2 teaspoons Tea or coffee, 1 cup Sugar, 1 teaspoon Cream, 2 tablespoons	Cream of pea soup Peas, 4 tablespoons Water, $\frac{3}{4}$ cup Cream, 1 tablespoon Butter, 1 teaspoon Boiled salmon with cream sauce Salmon, fresh, small por- tion Cornstarch, $1\frac{1}{2}$ teaspoons Cream, 1 tablespoon Butter, 1 teaspoon Stuffed tomato with rice Tomato, 1 medium Rice, cooked, 1 heaping sauce dish Butter, 1 teaspoon Ry-Krisps, 4 Butter, 1 teaspoon Fruit mousse Banana, $\frac{1}{2}$ medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, $\frac{1}{2}$ teaspoon Whipped cream, 1 table- spoon Tea or coffee, 1 cup Sugar, 1 teaspoon Cream, 2 tablespoons
Night	Soup Cracker Main Dish Meat or poultry, average portion Potato or cereal Butter Vegetable, cooked or in salad Butter Bread Butter Dessert Fruit, cake or ices Beverage Sugar Cream	Bouillon Ry-Krisps, 2 Pot roast Baked sweet potato Butter, $\frac{1}{2}$ teaspoon String beans, 1 sauce dish Butter, $\frac{1}{2}$ teaspoon Grapefruit salad with whipped cream Lettuce, 2 leaves Grapefruit, sectioned, $\frac{1}{2}$ Whipped cream, 1 table- spoon Corn meal mush, 4 small cakes Butter, 1 teaspoon Rice cakes, 2 Jelly, 1 tablespoon Tea or coffee Sugar, 1 teaspoon Cream, 2 tablespoons	Consomme Ry-Krisp, 2 Roast chicken Candied sweet potato Brown sugar, 1 teaspoon Butter, $\frac{1}{2}$ teaspoon String beans, 1 sauce dish Butter, $\frac{1}{2}$ teaspoon Hearts of lettuce salad with dressing Oil allowed, 1 tablespoon Lettuce, 3 leaves Corn meal mush, 4 small cakes Butter, 1 teaspoon Orange sherbet Orange juice, 1 orange Sugar, $\frac{1}{2}$ teaspoon Tea or coffee Sugar, 1 teaspoon Cream, 2 tablespoons

ALLERGY
TYPICAL DIET
(CHILD)

Male. Age 9 Years. Average Body Weight, 26 Kgm.

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy- drate	Pro- tein	Fat	Cal- cium	Phos- pho- rus	Iron	Vita- min A	Thia- mine	Ribo- flavin	Nia- cin	Ascor- bic Acid	Vita- min D
**Milk														
**Cheese														
**Egg														
Meat, fish, or poultry														
Beef	3 oz.	90		16.5	16.2	0.009	0.177	2.4		99	126	4.41		
Cream, heavy	$\frac{3}{4}$ c.	160	5.0	3.2	56.5	9.117	0.085	0.1	2645	43	213	0.21		43
Butter	6 t.	30			24.0	0.006	0.006		990		2	0.02		
Oil	1 t.	5			5.0									
**Mayonnaise														
Fruit														
10 per cent—orange	1 sm.	100	11.2	1.0	0.2	0.033	0.023	0.4	190	80	30	0.20	49	
10 per cent—grapefruit	$\frac{1}{2}$ m.	100	10.0	0.5	0.2	0.017	0.018	0.3		40	20	0.20	40	
**15 per cent—apple														
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.028	0.6	430	90	60	0.60	10	
Vegetables														
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23	
5 per cent—lettuce	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7	
**10 per cent—carrots														
10 per cent—string beans	1 s. d.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60	19	
Peas, dried	4 T.	60	37.0	14.8	0.6	0.044	0.238	3.6	222	522	174	1.80		
**Potato, white														
Potato, sweet	1 m.	150	42.0	2.7	1.1	0.045	0.074	1.1	7500	150	90	1.10	33	
**Bread, whole wheat														
Cornmeal mush, cooked	$\frac{3}{4}$ c.	160	22.2	2.7	1.1	0.033	0.083	0.9	153	135	81	1.08		
**Flour, wheat														
Crackers														
**Wheat														
Ry-Krisps	6	42	30.0	4.8		0.024	0.150	1.8		126	90	0.90		
Cereals														
Rolled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33		
**Macaroni														
Rice, brown, cooked	1 hp. s. d.	180	23.3	2.3	0.5	0.012	0.091	1.7		87	15	1.38		
Sugar	5 t.	25	25.0											
Jelly	3 t.	20	13.0			0.003	0.002	0.1	2	2	4	0.03		
Desserts														
**Cake, plain														
Gelatin	$\frac{1}{2}$ T.	3		1.7										
Beverages														
Cocon	2 t.	6	1.6	0.4	1.0	0.006	0.036	0.14			20	0.12		
Totals of the Food Constituents			275.4	60.5	109.2	0.468*	1.220	16.34	14,402	1738	1127*	13.65	181	43*

Total Calories 2326

* Below the normal.
** Forbidden foods.

ALLERGY
TYPICAL DIET
(CHILD)
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Fruit Cereal Cream Sugar Bread Butter Beverage Sugar Cream	Orange, 1 Rolled oats, 1 sauce dish Cream, 2 tablespoons Sugar, 1 teaspoon Corn pone, 2 small cakes, or Ry-Krisps, 3 Butter, 1 teaspoon Cocoa, 1 eup Water, $\frac{3}{4}$ eup Sugar, 1 teaspoon Cream, 3 tablespoons Cocoa, 1 teaspoon	Cornflakes, 1 sauce dish Cream, 1 tablespoon Sugar, 1 teaspoon Blueberries, 4 tablespoons Corn pone, 2 small cakes Syrup, 2 teaspoons Butter, 1 teaspoon Cocoa, 1 eup Water, $\frac{3}{4}$ eup Sugar, 1 teaspoon Cream, 3 tablespoons Cocoa, 1 teaspoon
Noon	Main dish Meat, fish or poultry, average serving Potato or cereal Butter Vegetable, cooked or in salad Bread Butter Dessert Fruit Gelatin	Pot roast Baked sweet potato, 1 medium Butter, 1 teaspoon String beans, 1 sauce dish Butter, 1 teaspoon Corn pone, 2 small cakes, or Ry-Krisps, 3 Butter, 1 teaspoon Fruit gelatin with cream Banana, $\frac{1}{2}$ medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 2 teaspoons Cream, 2 tablespoons	Creamed chicken Chicken, diced, $\frac{1}{2}$ eup Cream, 1 tablespoon Water, 3 tablespoons Butter, 1 teaspoon Candied sweet potato Sweet potato, 1 medium Brown sugar, 1 teaspoon Butter, $\frac{1}{2}$ teaspoon String beans, 1 sauce dish Rice muffin, 1 Butter, $\frac{1}{2}$ teaspoon Fruit mousse Banana, $\frac{1}{2}$ medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 2 teaspoons Whipped cream, 1 table- spoon
Night	Soup Cereal allowed Vegetable, cooked or in salad Bread Butter (molasses) Dessert Fruit or cake Beverage Sugar Cream	Pea soup Peas, 4 tablespoons Water, 1 eup Cream, 1 teaspoon Butter, 1 teaspoon Baked brown rice and to- mato Rice, 1 heaping sauce dish Cream, 2 teaspoons Butter, 1 teaspoon Tomato, 1 medium Lettuce salad with dressing Lettuce, 3 leaves Olive oil, 1 teaspoon Corn pone, 2 small cakes Syrup, 3 teaspoons Grapefruit eup Grapefruit, $\frac{1}{2}$ Cocoa, 1 eup Water, $\frac{3}{4}$ eup Sugar, 1 teaspoon Cream, 3 tablespoons Cocoa, 1 teaspoon	Cream of pea soup Peas, 4 tablespoons Water, 1 eup Cream, 2 teaspoons Butter, 1 teaspoon Brown rice ring Rice, 1 heaping sauce dish Cream, 1 teaspoon Butter, $\frac{1}{2}$ teaspoon Grilled tomato Butter, $\frac{1}{2}$ teaspoon Tomato, 1 medium Grapefruit salad Lettuce, 3 leaves Grapefruit, sectioned, $\frac{1}{2}$ Whipped cream, 1 table- spoon Sugar, 1 teaspoon Ry-Krisps, 3 Butter, 1 teaspoon Jelly, 1 teaspoon Cocoa, 1 eup Water, $\frac{3}{4}$ eup Sugar, 1 teaspoon Cream, 3 tablespoons Cocoa, 1 teaspoon

SPASTIC CONSTIPATION
TYPICAL DIET
Average Body Weight, 70 Kgm.

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy- drate	Pro- tein	Fat	Cal- cium	Phos- pho- rus	Iron	Vita- min A	Thia- mine	Ribo- flavin	Nia- cin	Ascor- bic Acid	Vita- min D
Milk	2 c.	480	24.0	16.8	18.8	0.566	0.446	0.3	768	192	816	0.48	4	10
Cheese	2 T.	30	0.5	7.0	9.7	0.262	0.183	0.2	522	12	150	0.06		
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45
Poultry	2 oz.	60		13.3	2.4	0.010	0.156	2.2		120	102	4.11	2	
Fish	2 oz.	60		10.4	0.2	0.012	0.118	0.6	4	54	72	0.54		
Cream, light	$\frac{1}{2}$ c.	120	4.8	3.2	24.0	0.112	0.096	0.1	1000	40	168	0.16	1	16
Butter	4 T.	60			48.0	0.012	0.012		1980		4	0.04		
Mayonnaise														
Fruit														
10 per cent—orange juice	1 c. sc.	200	20.2			0.066	0.046	0.8	380	160	60	0.40	98	
20 per cent—apple sauce	1 s. d.	100	19.7	0.2	0.1	0.004	0.006	0.2	60	10	10		1	
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.028	0.6	430	90	60	0.60	10	
Vegetables														
5 per cent—tomato, strained	6 T.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23	
10 per cent—string beans, strained	6 T.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60	19	
10 per cent—carrots, strained	6 T.	100	9.3	1.2	0.3	0.039	0.037	0.8	12000	70	60	0.50	6	
Potato	1 L.	200	38.2	4.0	0.2	0.022	0.112	1.4	40	220	80	2.40	34	
Bread, white, enriched	5 sl.	150	80.0	12.5	3.0	0.085	0.150	3.0		360	210	3.30		
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.28		
Crackers, white	2	12	9.0	1.2	1.2	0.002	0.012	0.2		4				
Cereals														
Rolled oats, cooked, strained	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33		
Macaroni, cooked	$\frac{1}{2}$ c.	150	22.0	4.0	0.4	0.007	0.043	0.4		39	24	0.63		
Sugar	6 t.	30	30.0											
Jelly	3 t.	20	13.0			0.003	0.002	0.1	2	2	4	0.03		
Desserts														
Cake, plain	3" sq.		42.7	3.3	7.0	0.032	0.053	0.4	315	31	60	0.22		
Gelatin	$\frac{1}{2}$ T.	3		1.7										
Beverages														
Bouillon														
Totals of the Food Constituents			373.9	95.7	123.9	1.361	1.814	15.8	19,801	1843	2250	15.33	198	71

Total Calories 2998

SPASTIC CONSTIPATION

TYPICAL DIET

Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Fruit, strained or juice Cereal, refined or strained Milk Cream Sugar Egg Bread, white, enriched Butter Beverage No coffee, tea, or cocoa, except as flavoring	Orange juice, strained, 1 scant cup Rolled oats, strained, 1 sauce dish Cream, 4 tablespoons Sugar, 2 teaspoons Egg, soft cooked, 1 Toast, white, enriched, 2 slices Butter, 3 teaspoons Jelly, 3 teaspoons Milk, 1 glass	Orange juice, strained, 1 scant cup Cream of Wheat, cooked in milk, 1 sauce dish Milk, $\frac{1}{4}$ cup Cream, 4 tablespoons Sugar, 2 teaspoons Egg, poached, 1 Toast, white, enriched, 2 slices Butter, 2 teaspoons Jelly, 3 teaspoons Milk, flavored with coffee Milk, $\frac{1}{2}$ glass Sugar, 1 teaspoon Coffee, 1 tablespoon
Noon	Main dish Cereal or potato Egg, mild cheese, milk, chicken, or fish Vegetables, strained, buttered, scalloped, souffle, or in milk soup Bread, white, enriched Butter Dessert Strained fruit, plain cake, simple pudding, or gelatin Milk	Macaroni and cheese Macaroni, $\frac{3}{4}$ cup Cheese grated, 4 tablespoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 2 teaspoons Tomato juice, $\frac{1}{2}$ cup, scant Crackers, 2 Bread, white, enriched, 1 slice Butter, 2 teaspoons Apple Sauce, 1 sauce dish Sugar, 2 teaspoons Milk, 1 glass	Creamed chicken in macaroni ring Macaroni, $\frac{3}{4}$ cup Chicken, diced, $\frac{1}{2}$ cup Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 2 teaspoons Molded tomato Tomato, strained, 6 tablespoons Gelatin, $\frac{1}{4}$ tablespoon Bread, white, enriched, 2 slices Butter, 2 teaspoons Apple snow Apple, 2 tablespoons Egg white, $\frac{1}{2}$ Sugar, 1 teaspoon Milk, $\frac{1}{2}$ glass
Night	Milk soup Chicken or fish Potatoes Vegetables, strained, buttered, scalloped, souffle, or in milk soup Bread, white, enriched Butter Dessert Custard, cereal, puddings, plain cake, gelatin, or strained fruits	Baked haddock Baked potato, 1 large Carrots, strained String beans, strained, Butter, for vegetables, 3 teaspoons Bread, white, enriched, 2 slices Butter, 2 teaspoons Fruit gelatin with cream Banana, ripe, $\frac{1}{2}$ medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 2 teaspoons Cream, 4 tablespoons Cake, plain, 1 piece	Carrot soup Carrots, strained, 6 tablespoons Milk, $\frac{1}{4}$ cup Butter, 2 teaspoons Crackers, 2 Swordfish Buttered potato balls Potato, 1 large Butter, 1 teaspoon Creamed string beans String beans, strained, 6 tablespoons Butter, 1 teaspoon Cream, 1 tablespoon Toast points, 1 slice, white enriched Butter, 2 teaspoons Molded banana with cream Banana, ripe, $\frac{1}{2}$ medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 2 teaspoons Cream, 3 tablespoons Cup cake, 1

ULCERATIVE COLITIS**
TYPICAL DIET
Average Body Weight, 70 Kgm.

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy-drate	Pro-tein	Fat	Cal-cium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Nia-cin	Ascor-bic Acid	Vita-min D
Milk	4 c.	960	48.0	34.0	38.0	1.132	0.892	0.7	1536	384	1632	0.96	8	20
Cheese, American	2 T.	30	0.5	7.0	9.7	0.262	0.183	0.2	522	12	150	0.06		
Eggs	2	100	0.8	12.8	11.6	0.054	0.210	2.8	1140	120	340	0.10		90
Meat, fish, or poultry														
Cream, light	½ c.	120	4.8	3.2	24.0	0.112	0.096	0.1	1000	40	168	0.16	1	16
Butter	4 T.	60			48.0	0.012	0.012		1980		4	0.04		
Mayonnaise														
Fruit														
Vegetables														
Potato	1 L.	200	38.2	4.0	0.2	0.022	0.112	1.4	40	220	80	2.40	34	
Bread, white, enriched	6 sl.	180	96.0	15.0	3.6	0.102	0.180	3.6		432	252	3.96		
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.28		
Cornstarch	1 T.	8	8.7											
Crackers, white	6	36	27.0	3.6	3.6	0.006	0.036	0.6		21				
Cereals														
Cream of wheat, cooked	1 s. d.	160	22.0	3.6	0.4	0.151	0.169	12.7		159	18	0.40		
Macaroni, cooked	¾ c.	150	22.0	4.0	0.4	0.007	0.043	0.4		39	24	0.63		
Sugar	5 t.	25	25.0											
Jelly														
Desserts														
Cake, plain	3" sq.		42.7	3.3	7.0	0.032	0.053	0.4	315	31	60	0.22		
Beverages														
Bouillon														
Totals of the Food Constituents			341.7	91.4	146.6½	1.833	1.993	23.1	6533	1484*	2749	9.21*	43*	126

Total Calories 3052

* Below the normal.

** When process is healing the diet is similar to the ambulatory ulcer diet #2 p. 250.

ULCERATIVE COLITIS

TYPICAL DIET

Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Cereal, refined or strained Milk Cream Sugar Bread, white, enriched Butter Beverage, no tea, coffee, or cocoa, except as flavoring	Cream of wheat, 1 sauce dish Milk, $\frac{1}{2}$ cup Cream, 4 tablespoons Sugar, 1 teaspoon Toast, white, enriched, 2 slices Butter, 3 teaspoons No tea, coffee or cocoa, except as flavoring	Cream of wheat, 1 sauce dish, cooked in milk Milk, $\frac{1}{2}$ cup Cream, 4 tablespoons Sugar, 1 teaspoon Toast, white, enriched, 2 slices Butter, 3 teaspoons No tea, coffee or cocoa, except as flavoring
Mid-morn- ing	Milk Crackers, white Butter	Milk, $\frac{1}{2}$ glass Crackers, white, 2 Butter, 1 teaspoon	Vanilla junket Milk, $\frac{1}{2}$ cup Vanilla junket powder Crackers, white, 2 Butter, 1 teaspoon
Noon	Main dish Cereal or potato Cheese, egg, or milk Bread, white, enriched Butter Dessert Custard, simple puddings, or plain cake	Macaroni and cheese Macaroni, $\frac{3}{4}$ cup Cheese, grated, 4 tablespoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Bread, white, enriched, 2 slices Butter, 3 teaspoons Custard Egg, 1 Sugar, 2 teaspoons Milk, $\frac{1}{2}$ cup	Macaroni and cheese Macaroni, $\frac{3}{4}$ cup Cheese, grated, 4 tablespoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Toast, white, enriched, 2 slices Butter, 2 teaspoons Floating island Egg, 1 Sugar, 1 teaspoon Milk, $\frac{1}{2}$ cup
Mid-after- noon	Milk Crackers, white	Cornstarch pudding Cornstarch, 1 tablespoon Milk, $\frac{1}{2}$ cup Sugar, 2 teaspoons Cream, 4 tablespoons Crackers, white, 2	Molded cornstarch pudding Cornstarch, 1 tablespoon Milk, $\frac{1}{2}$ cup Sugar, 2 teaspoons Coloring Cream, 2 tablespoons Crackers, white, 2
Night	Egg or mild cheese Potato or cereal, refined Bread, white, enriched Butter Dessert Custard, simple pudding, or plain cake Milk	Egg, poached, 1 Baked potato, 1 large Butter, 2 teaspoons Bread, white, enriched, 2 slices Butter, 2 teaspoons Cake, plain, 1 piece Milk, $\frac{1}{2}$ glass	Egg a la Suisse Egg, 1 Cream, 2 tablespoons Butter, 1 teaspoon Cheese, grated, 2 teaspoons on toast Baked stuffed potato Potato, 1 large Milk, 2 tablespoons Butter, 2 teaspoons Melba toast, 2 slices Butter, 1 teaspoon Cup cake, 1, without frosting Milk, $\frac{1}{2}$ glass
Between night meal and bed- time	Milk Crackers, white	Milk, 1 glass Crackers, white, 2	Milk shake Milk, 1 glass Sugar, 1 teaspoon Vanilla Crackers, white, 2

ULCER
TYPICAL DIET
(AMBULATORY No. 1)
Average Body Weight, 70 Kgm.

Foods	Amounts		Grains					Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy-drate	Pro-tein	Fat	Cal-cium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Nia-cin	As-corbic Acid	Vita-min D
Milk	4 c.	960	48.0	34.0	38.0	1.132	0.892	0.7	1536	384	1632	0.96	8	20
Cheese	2 T.	30	0.5	7.0	9.7	0.262	0.183	0.2	522	12	150	0.06		
Egg	3	150	1.2	19.2	17.4	0.081	0.315	4.2	1710	180	510	0.15		135
Meat, fish or poultry														
Cream, light	1 c.	240	9.6	6.4	48.0	0.224	0.192	0.2	2000	80	336	0.32	2	32
Butter	4 T.	60			48.0	0.012	0.012		1980		4	0.04		
Mayonnaise														
Fruit														
10 per cent—orange juice, strained	½ c. sc.	100	10.1			0.033	0.023	0.4	190	80	30	0.20	40	
Vegetables														
Potato	1 L.	200	38.2	4.0	0.2	0.022	0.112	1.4	40	220	80	2.40	34	
Bread, white, enriched	6 sl.	180	96.0	15.0	3.6	0.102	0.180	3.6		432	252	3.96		
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.28		
Crackers, white	4	24	18.0	2.4	2.4	0.004	0.024	0.4		8				
Cereals														
Cream of Wheat, enriched, cooked	1 s. d.	160	22.0	3.6	0.4	0.151	0.169	12.7		159	18	0.40		
Macaroni, cooked	¾ c.	150	22.0	4.0	0.4	0.007	0.043	0.4		39	24	0.63		
Sugar	3 t.	15	15.0											
Jelly														
Desserts														
Cake, plain	3" sq.		42.7	3.3	7.0	0.032	0.053	0.4	315	31	60	0.22		
Beverages														
Bouillon														
Totals of the Food Constituents			329.3	99.8	175.2	2.063	2.205	24.8	8293	1660	3117	9.62*	93	187
Total Calories 3,293														

* Below the normal.

ULCER
TYPICAL DIET
(AMBULATORY No. 1)
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Cereal, refined Milk Cream Sugar Bread, white, enriched Butter Orange juice, strained and diluted	Cream of wheat, enriched, 1 sauce dish Milk, $\frac{1}{2}$ cup Cream, $\frac{1}{4}$ cup Sugar, 1 teaspoon Toast, white, enriched, 2 slices Butter, 3 teaspoons Juice of 1 orange, strained and diluted	Cream of wheat, enriched, 1 sauce dish cooked in milk Milk, $\frac{1}{2}$ cup Cream, $\frac{1}{4}$ cup Sugar, 1 teaspoon Toast, white, enriched, 2 slices Butter, 3 teaspoons Juice of 1 orange, strained and diluted
Mid- morn- ing	Milk and cream Crackers, white Butter	Milk, $\frac{1}{2}$ glass Cream, 4 tablespoons Crackers, white, 2 Butter, 1 teaspoon	Vanilla junket with cream Milk, $\frac{1}{2}$ cup Junket powder, vanilla Cream, 4 tablespoons Crackers, white, 3 Butter, 1 teaspoon
Noon	Main dish Cereal, refined Egg, mild cheese, or milk Bread, white, enriched Butter Dessert Custard, simple pudding, or plain cake Milk	Macaroni and cheese Macaroni, $\frac{3}{4}$ cup Cheese, grated, 4 table- spoons Milk, $\frac{1}{2}$ cup Flour, $\frac{1}{2}$ tablespoon Butter, 1 teaspoon Toast, white, enriched, 2 slices Butter, 2 teaspoons Baked custard Egg, 1 Milk, $\frac{1}{2}$ cup Sugar, 2 teaspoons Milk, $\frac{1}{2}$ glass	Macaroni and cheese Macaroni, $\frac{3}{4}$ cup Cheese, grated, 4 table- spoons Milk, $\frac{1}{2}$ cup Flour, $\frac{1}{2}$ tablespoon Butter, 1 teaspoon Toast points, white, enriched, 2 slices Butter, 2 teaspoons Floating Island Egg, 1 Milk, $\frac{1}{2}$ cup Sugar, $\frac{1}{2}$ teaspoon Milk, $\frac{1}{2}$ glass
Mid- after- noon	Milk and cream Crackers, white Butter	Milk, $\frac{1}{2}$ glass Cream, 4 tablespoons Crackers, white, 3 Butter, 1 teaspoon	Milk shake Milk, $\frac{1}{2}$ cup Cream, 4 tablespoons Sugar, $\frac{1}{2}$ teaspoon Vanilla Crackers, white, 3 Butter, 1 teaspoon
Night	Eggs and mild cheese Cereal, refined Bread, white Butter Dessert Custard, simple pudding, or plain cake	Eggs, soft cooked, 2 Butter, 1 teaspoon Potato, mashed Potato, 1 large Cream, 4 tablespoons Butter, 1 teaspoon Toast, white, enriched, 2 slices Butter, 2 teaspoons Cake, plain, 1 piece	Omelet Eggs, 2 Butter, 1 teaspoon Creamed rice Rice, 1 sauce dish Cream, 2 tablespoons Butter, 1 teaspoon Toast, white, enriched, 2 slices Butter, 2 teaspoons Charlotte Russe Lady fingers Gelatin, $\frac{1}{2}$ tablespoon Milk, 2 tablespoons Sugar, 1 teaspoon Cream, 2 tablespoons Vanilla
Between night meal and bed- time	Milk	Milk, 1 glass	Milk, 1 glass

ULCER

TYPICAL DIET

(AMBULATORY No. 2)

Average Body Weight, 70 Kgm.

Foods	Amounts		Grams						Milli-grams	I.U.	Micrograms			Milligrams		I.U.
	Household Measure	Grams	Car-bohy- drate	Pro- tein	Fat	Cal- cium	Phos- pho- rus	Iron	Vita- min A	Thia- mine	Ribo- flavin	Nia- cin	As- corbic Acid	Vita- min D		
Milk	4 c.	960	48.0	34.0	38.0	1.132	0.892	0.7	1536	384	1632	0.96	8	20		
Cheese	2 T.	30	0.5	7.0	9.7	0.262	0.183	0.2	522	12	150	0.06				
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45		
Meat, fish, or poultry																
Beef	4 oz.	120		22.0	21.6	0.012	0.236	3.2		132	168	5.88				
Cream, light	1 c.	240	9.6	6.4	48.0	0.224	0.192	0.2	2000	80	336	0.32	2	32		
Butter	4 T.	60			48.0	0.012	0.012		1980		4	0.04				
Mayonnaise																
Fruit																
10 per cent—orange juice strained	½ c. sc.	100	10.1			0.033	0.023	0.4	190	80	30	0.20	49			
20 per cent—applesauce	1 s. d.	100	19.7	0.2	0.1	0.004	0.006	0.2	60	10	10		1			
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.028	0.6	430	90	60	0.60	10			
Vegetables																
5 per cent—tomato, strained	6 T.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23			
10 per cent—carrots, strained	6 T.	100	9.3	1.2	0.3	0.039	0.037	0.8	12000	70	60	0.50	6			
10 per cent—squash, strained	8 T.	100	8.8	1.5	0.3	0.019	0.028	0.6	4950	50	80	0.60	8			
Potato	1 L.	200	38.2	4.0	0.2	0.022	0.112	1.4	40	220	80	2.40	34			
Bread, white, enriched	5 sl.	150	80.0	12.5	3.0	0.085	0.150	3.0		360	210	3.30				
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.48				
Crackers, white	4	24	18.0	2.4	2.4	0.004	0.024	0.4		8						
Cereals																
Rolled oats, cooked, strained	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33				
Macaroni, cooked	½ c.	150	22.0	4.0	0.4	0.007	0.043	0.4		39	24	0.63				
Sugar	3 t.	15	15.0													
Jelly																
Desserts																
Cake, plain	3" sq.		42.7	3.3	7.0	0.032	0.053	0.4	315	31	60	0.22				
Gelatin	½ T.	3		1.7												
Beverages																
Bouillon																
Totals of the Food Constituents			374.7	114.7	187.4	1.949	2.289	15.9	25,693	1925	3174	16.97	141	97		

Total Calories 3644

ULCER
TYPICAL DIET
(AMBULATORY No. 2)
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morning	Fruit, strained or juice Cereal, refined or strained, enriched Milk Cream Sugar Egg Bread, white, enriched Butter Beverage No tea, coffee, or cocoa, except as flavoring	Orange juice, strained, 1 cup Rolled oats, strained, 1 sauce dish Milk, $\frac{1}{2}$ cup Cream, 4 tablespoons Sugar, 1 teaspoon Egg, soft cooked, 1 Toast, white, enriched, 2 slices Butter, 2 teaspoons Milk, $\frac{1}{2}$ glass	Orange juice, strained, 1 cup Cream of wheat, strained, 1 sauce dish, cooked in milk Milk, $\frac{1}{2}$ cup Cream, $\frac{1}{2}$ cup Sugar, 1 teaspoon Egg, poached, 1 Toast, white, enriched, 2 slices Butter, 2 teaspoons Milk, warm, flavored with a very small amount of coffee or cocoa, $\frac{1}{2}$ cup
Mid-morning	Milk and cream Crackers, white	Milk, $\frac{1}{2}$ cup Cream, 3 tablespoons Cracker, white, 1	Vanilla junket with cream Milk, $\frac{1}{2}$ cup Vanilla junket powder Cream, 3 tablespoons Cracker, toasted, 1 white
Noon	Main dish Cereal, refined, or potato Egg, mild cheese, milk, chicken, or fish Vegetables, strained, scalloped, souffle, or in milk soup, or buttered Bread, white, enriched Butter Dessert Fruit, strained, pudding, plain cake, or gelatin Milk	Macaroni and cheese Macaroni, $\frac{1}{2}$ cup Cheese, grated, or cream cheese, 2 tablespoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 2 teaspoons Tomato juice, $\frac{1}{2}$ cup, scant Bread or toast, white, enriched, 2 slices Butter, 2 teaspoons Apple sauce, $\frac{1}{2}$ cup Sugar, 1 teaspoon Milk, 1 glass	Creamed chicken in macaroni ring Macaroni, $\frac{1}{2}$ cup Chicken, diced, $\frac{1}{2}$ cup Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Molded tomato Strained tomato, 6 tablespoons Gelatin, $\frac{1}{2}$ tablespoon Melba toast, 2 slices Butter, 3 teaspoons Apple Snow Apple strained, 2 tablespoons Egg white, $\frac{1}{2}$ Sugar, $\frac{1}{2}$ teaspoon Milk, $\frac{1}{2}$ cup
Mid-afternoon	Milk and cream Crackers, white	Milk, $\frac{1}{2}$ cup Cream, 3 tablespoons Cracker, white, 1	Milk shake Milk, $\frac{1}{2}$ cup Cream, 3 tablespoons Sugar, $\frac{1}{2}$ teaspoon Melba toast, $\frac{1}{2}$ slice
Night	Soup Chicken or fish, small serving Potato, baked, boiled, mashed, or creamed Vegetables, strained Bread, white, enriched Butter Dessert Custard, cereal, puddings, plain cake, Jello, or strained fruits	Baked haddock Baked potato, 1 large Butter, 2 teaspoons Carrots, strained, buttered Squash, strained, buttered Butter, 3 teaspoons Bread or toast, white, enriched, 1 slice Butter, 1 teaspoon Fruit gelatin with cream Banana, ripe, 1 medium Gelatin, $\frac{1}{2}$ tablespoon Sugar, 1 teaspoon Cream, 3 tablespoons Cake, plain, 1 piece	Carrot soup Carrots, strained, 6 tablespoons Milk, $\frac{1}{2}$ cup Butter, 1 teaspoon Planked halibut with buttered potato balls Halibut, small serving Potato, 1 large Butter, 4 teaspoons String beans with cream String beans, strained, 6 tablespoons Cream, 1 tablespoon Toast points, $\frac{1}{2}$ slice of bread, white, enriched Butter, 1 teaspoon Molded banana with cream Banana, ripe, $\frac{1}{2}$ medium Gelatin, $\frac{1}{2}$ tablespoon Sugar, 1 teaspoon Cream, 2 tablespoons Cup cake without frosting, 1
Between night meal and bedtime	Milk and cream Crackers, white	Milk, $\frac{1}{2}$ cup Cream, 3 tablespoons Crackers, white, 2	Milk toast Milk, $\frac{1}{2}$ cup Cream, 3 tablespoons Toast, white, enriched, $\frac{1}{2}$ slice

UNDERWEIGHT
TYPICAL DIET
(ADULT)
Average Body Weight, 70 Kgm.

Foods	Amounts		Grams						Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy-drate	Pro-tein	Fat	Cal-cium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Nia-cin	As-corbic Acid	Vita-min D	
Milk	3 c.	720	36.0	25.2	28.2	0.849	0.669	0.5	1152	288	1224	0.72	6	15	
Cheese	2 T.	30	0.5	7.0	9.7	0.262	0.183	0.2	522	12	150	0.06			
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45	
Meat, fish, or poultry															
Beef	4 oz.	120		22.0	21.6	0.012	0.236	3.2		132	168	5.88			
Cream, light	1 c.	240	9.6	6.4	48.0	0.224	0.192	0.2	2000	80	336	0.32	2	32	
Butter	5 T.	75			60.0	0.015	0.015		2475		5	0.05			
Mayonnaise	6 t.	30	1.0		22.0	0.004	0.010	0.2	58	12	12			6	
Fruit															
10 per cent—orange	1 sm.	100	11.2	1.0	0.2	0.033	0.023	0.4	190	80	30	0.20	49		
15 per cent—apple	1 m.	150	22.5	0.5	0.6	0.009	0.015	0.5	135	60	30	0.30	8		
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.028	0.6	430	90	60	0.60	10		
Vegetables															
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23		
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7		
10 per cent—string beans	1 s.d.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60	19		
10 per cent—carrots	1 s.d.	100	9.3	1.2	0.3	0.039	0.037	0.8	12000	70	60	0.50	6		
Potato	1 L.	200	38.2	4.0	0.2	0.022	0.112	1.4	40	220	80	2.40	34		
Bread, white, enriched	3 sl.	90	48.0	7.5	1.8	0.051	0.090	1.8		216	126	1.98			
whole wheat	2 sl.	60	28.8	5.8	2.2	0.036	0.240	1.6		168	90	1.96			
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.28			
Crackers, white	2	8	6.0	0.8	1.0	0.002	0.008	0.1		4					
whole grain	2	20	14.8	1.6	2.0	0.004	0.040	0.4		60	24	0.30			
Cereals															
Rolled oats, cooked	1 s.d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33			
Macaroni, cooked	¾ c.	150	22.0	4.0	0.4	0.007	0.043	0.4		39	24	0.63			
Sugar	9 t.	45	45.0												
Jelly	6 t.	40	26.0	0.1		0.006	0.004	0.1	4	4	8	0.06			
Desserts															
Cake, frosted	2½" cu.		49.2	3.4	4.9	0.033	0.080	1.3	315	31	60	0.22			
Gelatin	½ T.	3		1.7											
Beverages															
Bouillon	½ can	156	4.7	8.1											
Totals of the Food Constituents			434.3	117.5	211.8	1.755	2.346	18.5	22,161	2025	2880	18.11	164	98	

Total Calories 4113

UNDERWEIGHT

TYPICAL DIET

(ADULT)

Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morning	Fruit Cereal Milk or cream Sugar Egg Bread, white, enriched Butter Jelly Beverage Cream Sugar	Orange, 1 small Rolled oats, 1 sauce dish Cream, 4 tablespoons Sugar, 2 teaspoons Egg, 1 Bread, white, enriched, 2 slices Butter, 4 teaspoons Jelly, 1 heaping tablespoon Coffee Cream, 2 tablespoons Sugar, 2 teaspoons	Orange juice, 1 orange, small Shredded wheat, 1 biscuit Strawberries, 10 berries Cream, 4 tablespoons Sugar, 1 teaspoon Egg, soft boiled, 1 Muffins, 2 Butter, 4 teaspoons Marmalade, 1 tablespoon Coffee Cream, 2 tablespoons Sugar, 2 teaspoons
Mid-morn- ing	Milk Crackers	Milk, $\frac{1}{2}$ glass Cracker, whole wheat, 1 Butter, 1 teaspoon	Orange junket Milk, $\frac{1}{2}$ cup Orange junket powder Crackers, whole wheat
Noon	Main dish Cereal or potato Cheese, egg, or milk Vegetables, cooked or in salad Bread, white, enriched Butter Dessert, Fruit, pudding, or cake Milk	Macaroni and cheese Macaroni, $\frac{1}{2}$ cup Cheese, grated, 4 tablespoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Tomato and lettuce salad Tomato, 1 medium Lettuce, 3 leaves Mayonnaise, 2 tablespoons Bread, whole wheat, 2 slices Butter, 3 teaspoons Baked apple with cream Apple, 1 medium Sugar, 2 teaspoons Cream, 4 tablespoons Milk, $\frac{1}{2}$ glass	Creamed chicken and mushrooms in macaroni ring Macaroni, $\frac{1}{2}$ cup Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Chicken, diced, $\frac{1}{2}$ cup Stuffed tomato salad Tomato, 1 medium Lettuce, 3 leaves Celery, chopped, 2 tablespoons French dressing, 2 tablespoons Rolls, whole wheat, 2 Butter, 3 teaspoons Apple snow with cream Apple, 2 tablespoons Sugar, 2 teaspoons Egg white, $\frac{1}{2}$ Cream, 4 tablespoons Milk, $\frac{1}{2}$ glass
Mid-after- noon	Milk Crackers	Milk, $\frac{1}{2}$ glass Cracker, whole wheat, 1 Butter, 1 teaspoon	Milk shake Cream, 4 tablespoons Milk, $\frac{1}{2}$ cup Sugar, 1 teaspoon Flavoring as desired
Night	Soup Crackers Meat, fish, or poultry Potato or cereal Vegetables, cooked or in salad Bread, white, enriched Butter Dessert Fruit, cake, pudding, pastry, or gelatin dessert Beverage	Bouillon Crackers, 2 Pot Roast Baked potato, 1 large Butter, 2 teaspoons String beans, buttered, 1 sauce dish Carrots, buttered, 1 sauce dish Butter, 2 teaspoons Bread, white, enriched, 1 slice Butter, 1 teaspoon Fruit gelatin with cream Banana, 1 medium Gelatin, $\frac{1}{2}$ tablespoon Sugar, 1 teaspoon Cream, 4 tablespoons Cake with frosting, 1 serving Coffee Cream, 2 tablespoons Sugar, 2 teaspoons	Consomme Crackers, 2 Sirloin steak Parsley potato balls Potato, 1 large Butter, 2 teaspoons Parsley, chopped, 1 teaspoon Carrots, buttered, 1 sauce dish Butter, 2 teaspoons Hearts of escarole with Roque- fort cheese dressing, 2 table- spoons Roll, 1 Butter, 1 teaspoon Milk fruit sherbet, $\frac{1}{2}$ cup Fruit juice, 4 tablespoons Sugar, 1 teaspoon Milk, $\frac{1}{2}$ glass Frosted cup cake, 1 Coffee Cream, 2 tablespoons Sugar, 2 teaspoons
Between night meal and bedtime	Milk	Milk, 1 glass	Milk, $\frac{1}{2}$ glass

OBESITY
TYPICAL DIET
Average Body Weight, 70 Kgm.

Foods	Amounts		Grams						Milli-grams	I.U.	Micrograms			Milligrams		I.U.
	Household Measure	Grams	Car-bohy-drate	Pro-tein	Fat	Calcium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Niacin	As-corbic Acid	Vita-min D		
Milk	2 c.	480	24.0	16.8	18.8	0.566	0.446	0.3	768	192	816	0.48	4	10		
Cheese	1 T.	15	0.3	3.5	4.9	0.131	0.092	0.1	261	6	75	0.03				
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45		
Meat, fish, or poultry																
Beef	4 oz.	120		22.0	21.6	0.012	0.236	3.2		132	168	5.88				
Cream																
Butter	3 t.	15			12.0	0.003	0.003		495		1	0.01				
Mayonnaise																
Fruit																
10 per cent—orange	1 sm.	100	11.2	1.0	0.2	0.033	0.023	0.4	190	80	30	0.20	49			
15 per cent—apple	1 sm.	100	15.0	0.3	0.4	0.006	0.010	0.3	90	40	20	0.20	5			
20 per cent—banana	½ m.	50	11.5	0.6	0.1	0.004	0.014	0.3	215	45	30	0.30	5			
Vegetables																
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23			
5 per cent—spinach	1 s.d.	100	3.2	2.3	0.3	0.078*	0.055	3.0	9420	120	240	0.70	59			
5 per cent—cabbage, cooked	½ c.	100	5.3	1.4	0.2	0.046	0.031	0.5	80	70	60	0.30	52			
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7			
10 per cent—carrots	1 s.d.	100	9.3	1.2	0.3	0.039	0.037	0.8	12000	70	60	0.50	6			
Potato	1 sm.	100	19.1	2.0	0.1	0.011	0.056	0.7	20	110	40	1.20	17			
Bread, white, enriched	3 sl.	90	48.0	7.5	1.8	0.051	0.090	1.8		216	126	1.98				
Flour																
Crackers																
Cereals																
Macaroni, cooked	½ c.	100	14.6	2.6	0.3	0.005	0.028	0.3		26	16	0.42				
Sugar																
Jelly																
Desserts																
Gelatin	½ T.	3		1.7												
Beverages																
Bouillon	½ can	156	4.7	8.1												
Totals of the Food Constituents			171.6**	78.7	67.2**	1.043	1.260**	14.0	25,749	1247**	1915	12.92**	227	55		

Total Calories 1606

* May not be nutritionally available.
** Below the normal.

OBESITY
TYPICAL DIET
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morning	Fruit Egg Bread or cereal Butter Beverage Milk No sugar	Orange, 1 small Egg, soft cooked, 1 Bread, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Coffee Milk, 2 tablespoons Milk, 1 small glass	Orange juice, 1 orange, small Egg, poached, 1 Muffin, 1 small Butter, $\frac{1}{2}$ teaspoon Coffee Milk, 2 tablespoons Milk, 1 small glass
Noon	Main dish Vegetables Meat, egg, or cheese Vegetables, cooked or in salad Bread, white, enriched Butter Dessert Fruit Beverage No sugar	Macaroni and cheese, very small serving Macaroni, $\frac{1}{2}$ eup Cheese, grated, 2 tablespoons Milk, $\frac{1}{4}$ eup Flour, $\frac{1}{4}$ tablespoon Butter, $\frac{1}{2}$ teaspoon Tomato and lettuce salad Tomato, 1 medium Lettuce, 3 leaves Cabbage, steamed or raw Bread, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Baked apple, 1 small Milk, 1 small glass Tea or coffee	Celery soup Celery, $\frac{1}{4}$ eup Milk, $\frac{1}{4}$ eup Broth, $\frac{1}{4}$ eup Creamed chicken and mushrooms in macaroni ring, 1 small serving Macaroni, $\frac{1}{2}$ eup Chicken, $\frac{1}{4}$ eup, diced Mushrooms, diced, 1 tablespoon Milk, $\frac{1}{4}$ eup Flour, $\frac{1}{4}$ tablespoon Butter, $\frac{1}{2}$ teaspoon Stuffed tomato salad Tomato, 1 medium Lettuce, 3 leaves Celery, 2 tablespoons Roll, 1 small Butter, $\frac{1}{2}$ teaspoon Apple rings Apple, 1 small Milk, 1 small glass Tea or coffee
Night	Clear soup Meat, fish, or poultry, lean Potato or cereal Vegetables, cooked or in salad Bread, white, enriched Butter Dessert Fresh fruit Beverage No sugar	Bouillon Roast veal Baked potato, 1 small Butter, $\frac{1}{2}$ teaspoon Carrots, steamed, 1 sauce dish Spinach, 1 sauce dish Butter, $\frac{1}{2}$ teaspoon Bread, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Fruit gelatin Banana, sliced, $\frac{1}{2}$ medium Milk, 2 tablespoons Gelatin, $\frac{1}{4}$ tablespoon Tea or coffee	Consomme Sirloin steak Parsley potato balls Potato, 1 small Chopped parsley, 1 teaspoon Butter, $\frac{1}{2}$ teaspoon Carrots, sauteed, small serving Carrots Butter, $\frac{1}{2}$ teaspoon Hearts of escarole Roll, 1 small Butter, $\frac{1}{2}$ teaspoon Baked banana, $\frac{1}{2}$ small Lemon juice, 1 teaspoon Tea or coffee

DIABETES
TYPICAL DIET
(ADULT)

Average Body Weight, 70 Kgm.

Foods	Amounts		Grams						Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy-drate	Pro-tein	Fat	Calcium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Niacin	As-corbic Acid	Vita-min D	
Milk	2 c.	480	24.0	16.8	18.8	0.566	0.446	0.3	768	192	816	0.48	4	10	
Cheese	2 T.	30	0.5	7.0	9.7	0.262	0.183	0.2	522	12	150	0.06			
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45	
Meat, fish, or poultry															
Beef	4 oz.	120		22.0	21.6	0.012	0.236	3.2		132	168	5.88			
Cream, light	$\frac{1}{4}$ c.	60	2.4	1.6	12.0	0.056	0.048		500	20	84	0.08		8	
Butter	3 t.	15			12.0	0.003	0.003		495		1	0.01			
Mayonnaise															
Fruit															
10 per cent—orange	1 sm.	100	11.2	1.0	0.2	0.033	0.023	0.4	190	80	30	0.20	49		
15 per cent—apple	1 sm.	100	15.0	0.3	0.4	0.006	0.010	0.3	90	40	20	0.20	5		
20 per cent—banana	$\frac{1}{2}$ m.	50	11.5	0.6	0.1	0.004	0.014	0.3	215	45	30	0.30	5		
Vegetables															
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23		
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7		
10 per cent—string beans	1 s.d.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60	19		
10 per cent—carrots	1 s.d.	100	9.3	1.2	0.3	0.039	0.037	0.8	12000	70	60	0.50	6		
Potato	1 sm.	100	19.1	2.0	0.1	0.011	0.056	0.7	20	110	40	1.20	17		
Bread, white, enriched	3 sl.	90	48.0	7.5	1.8	0.051	0.090	1.8		216	126	1.98			
Flour	$\frac{1}{4}$ T.	2	1.5	0.2			0.002	0.1		9	5	0.07			
Crackers															
Cereals															
Macaroni, cooked	$\frac{1}{2}$ c.	100	14.6	2.6	0.3	0.005	0.028	0.3		26	16	0.42			
Sugar															
Jelly															
Desserts															
Gelatin	$\frac{1}{4}$ T.	3		1.7											
Beverages															
Bouillon	$\frac{1}{2}$ can	156	4.7	8.1											
Totals of the Food Constituents			174.9*	82.7	83.7	1.171	1.359*	11.8*	17,640	1172*	1879	12.70*	135	63	

Total Calories 1784

* Below the normal.

DIABETES
TYPICAL DIET
(ADULT)
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morning	Fruit Cereal Milk No sugar Egg Bread, white, enriched Butter Beverage No sugar	Orange juice, 1 orange, small Egg, soft cooked, 1 Toast, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Coffee Cream, 2 tablespoons	Orange juice, 1 orange, small Egg, dropped, 1, on Toast, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Coffee Cream, 2 tablespoons
Noon	Main dish Cereal or potato Cheese, egg, or milk Vegetables, cooked or in salad Bread, white, enriched Butter Fruit	Macaroni and cheese Macaroni, $\frac{1}{2}$ cup Cheese, grated, 4 tablespoons Milk, $\frac{1}{2}$ cup Flour, $\frac{1}{4}$ tablespoon Butter, $\frac{1}{2}$ teaspoon Tomato and lettuce salad Tomato, 1 medium Lettuce, 3 leaves Vinegar Bread, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Baked apple, 1 small Milk, $\frac{1}{2}$ cup Milk, 1 glass	Creamed chicken and mushrooms in macaroni ring Macaroni, $\frac{1}{2}$ cup Chicken, diced, $\frac{1}{4}$ cup Mushrooms, diced, 2 tablespoons Milk, $\frac{1}{2}$ cup Flour, $\frac{1}{4}$ tablespoon Butter, $\frac{1}{2}$ teaspoon Stuffed tomato salad Tomato, 1 medium Lettuce, 3 leaves Celery, 2 tablespoons Vinegar Roll, 1 Butter, $\frac{1}{2}$ teaspoon Raw apple rings Apple, 1 small Milk, $1\frac{1}{2}$ glasses
Night	Soup, fat free Crackers Meat, fish, or poultry, lean Potato Vegetables, cooked or in salad Bread, white, enriched Butter Dessert Fruit gelatin with saccharine Beverage No sugar	Bouillon Roast veal Baked potato, 1 small Butter, $\frac{1}{2}$ teaspoon String beans Carrots, steamed Butter for vegetables, $\frac{1}{2}$ teaspoon Bread, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Fruit gelatin Banana, $\frac{1}{2}$ medium Gelatin, $\frac{1}{4}$ tablespoon Coffee Cream, 2 tablespoons	Consomme Sirloin steak Parsley potato balls Potato, 1 small Parsley, chopped, 1 teaspoon Butter, $\frac{1}{2}$ teaspoon Carrots, steamed Hearts of escarole Vinegar Roll, 1 Butter, $\frac{1}{2}$ teaspoon Fruit gelatin Banana, $\frac{1}{2}$ medium Gelatin, $\frac{1}{4}$ tablespoon Coffee Cream, 2 tablespoons

DIABETES
TYPICAL DIET
(CHILD)

Male. Age 9 Years. Average Body Weight, 26 Kgm.

Foods	Amounts		Grams						Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Carbohydrate	Protein	Fat	Calcium	Phosphorus	Iron		Vitamin A	Thiamine	Riboflavin	Niacin	Ascorbic Acid	Vitamin D
Milk	4 c.	960	48.0	34.0	38.0	1.132	0.892	0.7		1536	384	1632	0.96	8	20
Cheese	1 T.	15	0.3	3.5	4.9	0.131	0.092	0.1		261	6	75	0.03		
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4		570	60	170	0.05		45
Meat, fish, or poultry															
Beef	2 oz.	60		11.0	10.8	0.006	0.118	1.6			66	84	2.94		
Cream															
Butter	3 t.	15			12.0	0.003	0.003			495		1	0.01		
Mayonnaise	1 t.	5	0.2		3.7	0.001	0.002			10	2	2			1
Fruit															
10 per cent—orange	2 sm.	200	22.4	2.0	0.4	0.066	0.046	0.8		380	160	60	0.40	98	
15 per cent—apple	1 m.	150	22.5	0.5	0.6	0.009	0.015	0.5		135	60	30	0.30	8	
20 per cent—banana	1 L.	150	34.5	1.8	0.3	0.012	0.042	0.9		645	135	90	0.90	15	
Vegetables															
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6		1100	60	40	0.60	23	
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3		540	20	23	0.06	7	
10 per cent—string beans	1 s. d.	100	7.7	2.4	0.2	0.065	0.004	1.1		630	80	100	0.60	19	
10 per cent—carrots	1 s. d.	100	9.3	1.2	0.3	0.039	0.037	0.8		12,000	70	60	0.50	6	
Potato	1 sm.	100	19.1	2.0	0.1	0.011	0.056	0.7		20	110	40	1.20	17	
Bread, white, enriched	3 sl.	90	48.0	7.5	1.8	0.051	0.090	1.8			216	126	1.93		
Flour	½ T.	4	3.0	0.5			0.004	0.1			18	11	0.14		
Crackers															
Cereals															
Rollled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2			204	39	0.33		
Macaroni, cooked	¾ c.	75	11.0	2.0	0.2	0.004	0.022	0.2			20	12	0.32		
Sugar															
Jelly															
Desserts															
Gelatin	¼ T.	3		1.7											
Beverages															
Bouillon															
Totals of the Food Constituents			250.8	82.8	81.5	1.603	1.693	12.8		18,322	1671	2595	11.32	201	66*

Total Calories 2068

* Below the normal.

DIABETES
TYPICAL DIET
(CHILD)
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morning	Fruit Cereal Milk Egg Bread, white, enriched Butter Milk	Oranges, 2 small Rolled oats, 1 sauce dish Milk, $\frac{1}{2}$ cup Egg, soft cooked, 1 Toast, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Milk, 1 glass	Orange juice, 2 oranges, small Shredded wheat, 1 biscuit Milk, $\frac{1}{2}$ cup Strawberries, 10 berries Bacon, 2 strips Toast, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Milk, 1 glass
Noon	Meat, fish, or poultry, small serving Potato or cereal Vegetables Bread, white, enriched Butter Dessert Fruit or gelatin des- sert without sugar	Roast veal Baked potato, 1 small Butter, $\frac{1}{2}$ teaspoon String beans Carrots, buttered Butter, $\frac{1}{2}$ teaspoon Bread, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Fruit gelatin Banana, 1 large Gelatin, $\frac{1}{4}$ tablespoon Milk, 1 glass	Sirloin steak Parsley potato balls Potato, 1 small Parsley, 1 teaspoon, chopped Butter, $\frac{1}{2}$ teaspoon String beans Carrots, buttered Butter, $\frac{1}{2}$ teaspoon Bread, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Baked banana, with lemon juice Milk, 1 glass
Night	Main dish Cereal or potato Cheese, egg, or meat Vegetables, cooked or in salad Salad dressing Bread, white, enriched Butter Fruit No sugar Milk	Macaroni and cheese Macaroni, $\frac{3}{8}$ cup Cheese, grated, 2 table- spoons Milk, $\frac{1}{2}$ cup Flour, $\frac{1}{2}$ tablespoon Butter, $\frac{1}{2}$ teaspoon Tomato and lettuce salad Tomato, 1 medium Lettuce, 3 leaves Salad dressing, 1 teaspoon Bread, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Baked apple Apple, 1 medium Milk, 1 glass	Creamed chicken and mush- rooms in macaroni ring Macaroni, $\frac{3}{8}$ cup Chicken, diced, $\frac{1}{3}$ cup Mushrooms, diced, 2 table- spoons Milk, $\frac{1}{2}$ cup Flour, $\frac{1}{2}$ tablespoon Butter, $\frac{1}{2}$ teaspoon Stuffed tomato salad Tomato, 1 small Lettuce, 3 leaves Celery, 2 tablespoons Salad dressing, 1 teaspoon Roll, 1 Butter, $\frac{1}{2}$ teaspoon Baked apple Apple, 1 medium Milk, 1 glass

LIVER DISEASE*

TYPICAL DIET

(CHRONIC)

Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Fruit Cereal Milk Sugar Egg Bread or toast, white, enriched Butter Jelly Milk	Orange, 1 small Rolled oats, 1 sauce dish Milk, $\frac{1}{2}$ cup Sugar, 3 teaspoons Egg, soft cooked, 1 Toast, white, enriched, 2 slices Butter, $\frac{1}{2}$ teaspoon Jelly, 2 heaping table- spoons Milk, whole, $\frac{1}{2}$ glass	Orange juice, 1 orange small Shredded wheat, 1 biscuit Strawberries, 10 Sugar, 1 tablespoon Milk, $\frac{1}{2}$ cup Egg, poached, 1 Muffins, 2 small Butter, $\frac{1}{2}$ teaspoon Marmalade, 1 tablespoon Milk, whole, 1 glass
Noon	Meat, fish, or poultry Cereal or potato Vegetables, cooked or in salad Bread, whole wheat Butter Jelly or jam Dessert Fruit Milk	Cold meat Macaroni Macaroni, $\frac{3}{4}$ cup Tomato sauce, $\frac{1}{2}$ cup Flour, 1 tablespoon Cottage cheese salad Lettuce, 3 leaves Cottage cheese, 2 table- spoons Bread, whole wheat, 2 slices Butter, $\frac{1}{2}$ teaspoon Jelly, 2 heaping table- spoons Baked apple Apple, 1 medium Sugar, 2 tablespoons Milk, whole, 1 glass	Cold sliced chicken Baked macaroni Macaroni, $\frac{3}{4}$ cup Tomato sauce, $\frac{1}{2}$ cup Bread crumbs, 3 table- spoons Cottage cheese salad Lettuce, 3 leaves Cottage cheese, 2 table- spoons Rolls, 2 Butter, $\frac{1}{2}$ teaspoon Marmalade, 2 heaping tablespoons Stuffed baked apple Apple, 1 medium Sugar, 2 teaspoons Raisins, 2 teaspoons Milk, whole, 1 glass
Night	Soup Crackers Meat, fish, or poultry Potato or cereal Vegetables, cooked or in salad Bread, white, enriched Butter Jelly Dessert Fruit, cake, pudding, pastry, or gelatin	Bouillon Crackers, 2 Hamburger, lean Baked potato, 1 large String beans, buttered, 1 sauce dish Carrots, buttered, 1 sauce dish Butter for vegetables, $\frac{1}{2}$ teaspoon Bread, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon Jelly, 1 heaping table- spoon Fruit gelatin Banana, 1 medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 3 teaspoons Cake, plain, 1 piece	Consomme Crackers, 2 Sirloin steak, lean Parsley potato balls Potato, 1 large Parsley, chopped, 1 tea- spoon Carrots, glazed Carrots, 1 sauce dish Sugar, 1 teaspoon Butter, $\frac{1}{2}$ teaspoon Hearts of escarole Roll, 1 Butter, $\frac{1}{2}$ teaspoon Jelly, 1 heaping table- spoon Jellyed fruit cup Banana, 1 medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 2 teaspoons Frosted cup cake, 1

* Some of the carbohydrate foods may be used in intermediate feedings instead of at meal time.

LIVER DISEASE

TYPICAL DIET

(ACUTE)

Average Body Weight, 70 Kgm.

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy-drate	Pro-tein	Fat	Cal-cium	Phos-phorus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Nia-cin	Ascor-bic Acid	Vita-min D
Milk	2 c.	480	24.0	16.8	18.8	0.566	0.446	0.3	768	192	816	0.48	4	10
Chcese														
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45
Meat, fish, or poultry														
Beef, lean	4 oz.	120		22.4	16.8	0.012	0.244	3.2		144	180	6.12		
Cream														
Butter	3 t.	15			12.0	0.003	0.003		495		1	0.01		
Mayonnaise														
Fruit														
10 per cent—orange	1 sm.	100	11.2	1.0	0.2	0.033	0.023	0.4	190	80	30	0.20	49	
15 per cent—apple	1 m.	150	22.5	0.5	0.6	0.009	0.015	0.5	135	60	30	0.30	8	
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.023	0.6	430	90	60	0.60	10	
Vegetables														
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23	
5 per cent—lcttuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7	
10 per cent—string beans	1 s. d.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60	19	
10 per cent—carrots	1 s. d.	100	9.3	1.2	0.3	0.039	0.037	0.8	12,000	70	60	0.50	6	
Potato	1 L.	200	38.2	4.0	0.2	0.022	0.112	1.4	40	220	80	2.40	34	
Bread, white, enriched	3 sl.	90	48.0	7.5	1.8	0.051	0.090	1.8		216	126	1.98		
whole wheat	2 sl.	60	28.8	5.8	2.2	0.036	0.240	1.6		168	90	1.96		
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.23		
Crackers	2	8	6.0	0.8	1.0	0.002	0.008	0.1		4				
Cereals														
Rolled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33		
Macaroni, cooked	$\frac{3}{4}$ c.	150	22.0	4.0	0.4	0.007	0.043	0.4		39	24	0.63		
Sugar	4 T.	60	60.0											
Jelly	8 T.	160	104.0	0.4		0.024	0.016	0.4	16	16	32	0.24		
Desserts														
Cake, plain	3" sq.		42.7	3.3	7.0	0.032	0.053	0.4	315	31	60	0.22		
Gelatin	$\frac{1}{4}$ T.	3		1.7										
Bevercages														
Bouillon	$\frac{1}{2}$ can	156	4.7	8.1										
Totals of the Food Constituents			482.9	94.7	70.0	0.983*	1.679	16.7	17,229	1789	1982	17.57	160	55
Total Calories 2940														

* Below the normal.

LIVER DISEASE*

TYPICAL DIET

(ACUTE)

Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Fruit Cereal Sugar Milk Bread, white, enriched Butter Jelly Milk	Orange, 1 small Rolled oats, 1 sauce dish Milk, $\frac{1}{2}$ cup Sugar, 3 teaspoons Bread or toast, white, en- riched, 2 slices Butter, $\frac{1}{2}$ teaspoon Jelly, 2 heaping table- spoons Milk, whole, $\frac{1}{2}$ glass	Orange juice, 1 orange, small Shredded wheat, 1 biscuit Sugar, 1 tablespoon Strawberries, 10 Milk, $\frac{1}{2}$ cup Muffins, 2 medium Butter, $\frac{1}{2}$ teaspoon Jelly, 1 heaping table- spoon
Noon	Main dish Cereal or potato Cheese, egg or milk Vegetables, cooked or in salad Bread, whole wheat Butter Jelly Dessert Fruit Milk	Macaroni, boiled Macaroni, $\frac{3}{4}$ cup Tomato sauce, $\frac{1}{2}$ cup Flour, 1 tablespoon Lettuce salad with egg Lettuce, 3 leaves Egg, hard cooked, 1 Bread, whole wheat, 2 slices Butter, 1 teaspoon Jelly, 2 heaping table- spoons Baked apple Apple, 1 medium Sugar, 2 tablespoons Milk, whole, 1 glass	Creamed chicken and mush- rooms in macaroni ring Macaroni, $\frac{3}{4}$ cup Chicken, diced, $\frac{1}{2}$ cup Mushrooms, diced, 2 tablespoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, $\frac{1}{2}$ teaspoon Tomato and lettuce salad Tomato, 1 Lettuce, 3 leaves Rolls, 2 Butter, $\frac{1}{2}$ teaspoon Marmalade, 2 heaping tablespoons Stuffed baked apple Apple, 1 medium Sugar, 3 teaspoons Raisins, 2 teaspoons Milk, whole, 1 glass
Night	Soup Crackers Meat, fish, or poultry Potato or cereal Vegetables, cooked or in salad Bread, white, enriched Butter Jelly Dessert Fruit, cake	Bouillon Crackers, 2 Hamburger, lean Baked potato, 1 large String beans, buttered, 1 sauce dish Carrots, buttered, 1 sauce dish Butter for vegetables, 1 teaspoon Bread, white, enriched, 1 slice Butter, 1 teaspoon Jelly, 1 heaping table- spoon Fruit gelatin Banana, 1 medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 3 teaspoons Cake, plain, 1 piece	Consomme Crackers, 2 Sirloin steak, lean Parsley potato balls Potato, 1 large Parsley, chopped, 1 tea- spoon Butter, $\frac{1}{2}$ teaspoon Carrots, glazed Carrots, 1 sauce dish Sugar, 1 teaspoon Butter, $\frac{1}{2}$ teaspoon Hearts of escarole Roll, 1 Butter, $\frac{1}{2}$ teaspoon Marmalade, 1 heaping tablespoon Jellyed fruit cup Banana, 1 medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 3 teaspoons Cup cake, 1

* Some of the carbohydrate foods may be used in intermediate feedings instead of at meal time.

CARDIOVASCULAR DISEASE
(With Congestive Heart Failure)
TYPICAL DIET
(ADULT)
Average Body Weight, 70 Kgm.

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		
	Househol d Measure	Grams	Car-hoby- drate	Pro- tein	Fat	Cal- cium	Phos- pho- rus	Iron	Vita- min A	Thia- mine	Riho- flavin	Nia- cin	As- cor- hic Acid	So- dium
Milk	1 c.	240	12.0	8.4	9.4	0.283	0.223	0.2	384	96	408	0.24	2	120.00
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		40.50
Meat, fish, or poultry	3 oz.	90		16.5	16.2	0.009	0.177	2.4		99	126	4.41		45.90
Cream, light	$\frac{1}{4}$ c.	60	2.4	1.6	12.0	0.056	0.048		500	20	84	0.08		24.00
Butter, unsalted	6 t.	30			24.0	0.006	0.006		990					1.50
Fruit, fresh														
10 per cent—orange	1 sm.	100	11.2	1.0	0.2	0.033	0.023	0.4	190	80	30	0.20	49	0.30
15 per cent—apple	1 sm.	100	15.0	0.3	0.4	0.006	0.010	0.3	90	40	20	0.20	5	0.10
20 per cent—banana	$\frac{1}{2}$ m.	50	11.5	0.6	0.1	0.004	0.014	0.3	215	45	30	0.30	5	0.25
Vegetables, fresh														
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23	3.00
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7	2.33
10 per cent—string beans	$\frac{1}{2}$ c.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60	19	0.90
15 per cent—peas	1 s. d.	100	17.7	6.7	0.4	0.022	0.122	1.9	680	360	180	2.10	26	1.00
Potato	1 sm	100	19.1	2.0	0.1	0.011	0.056	0.7	20	110	40	1.20	17	0.80
Bread*, salt-free	3 sl.	90	43.6	5.7	2.3	0.009	0.057	0.45	75	39	36	0.66		0.66
Cereals														
Rolled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33		0.60
Macaroni, cooked	$\frac{1}{2}$ c.	100	14.6	2.6	0.3	0.005	0.028	0.3		26	16	0.42		0.20
Sugar	6 t.	30	30.0											
Desserts														
Gelatin	$\frac{1}{2}$ T.	3		1.7										0.90
Salt	None													
Beverages														
Bouillon														
Totals of the Food Constituents			210.8**	62.2	73.8	0.582**	1.078**	11.6	5984	1339**	1342**	11.46**	153	242.94**
Total Calories 1756														

* Computed from a recipe for salt-free bread.
** Below the normal.

CARDIOVASCULAR DISEASE
(With Congestive Heart Failure)
TYPICAL DIET
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Fruit, fresh Cereal Milk Egg Bread or toast, salt-free Butter, unsalted Beverage Cream Sugar	Orange, 1 small Rolled oats, 1 sauce dish Milk, $\frac{1}{2}$ cup Egg, soft cooked, 1 Toast, salt-free, 1 slice Butter, unsalted, 1 tea- spoon Coffee Cream, 2 tablespoons Sugar, 2 teaspoons	Strawberries, 10 Shredded wheat, 1 biscuit Milk, $\frac{1}{2}$ cup Toast, salt-free, 1 slice Butter, unsalted, 1 tea- spoon Coffee Cream, 2 tablespoons Sugar, 2 teaspoons
Noon	Main dish Meat, fish, or poultry Cereal or potato Vegetables, fresh, cooked without salt Bread, salt-free Butter, unsalted Dessert Fruit, fresh, or gelatin dessert without sugar Beverage Sugar	Hamburger, lean, no added salt, 1 small serving Baked potato, 1 small Butter, unsalted, 1 tea- spoon Peas, 1 serving Butter, unsalted, 1 tea- spoon Bread, salt-free, 1 slice Butter, unsalted, 1 tea- spoon Fruit gelatin Banana, $\frac{1}{2}$ medium Gelatin, $\frac{1}{4}$ tablespoon Tea Milk, 2 teaspoons Sugar, 2 teaspoons	Sirloin steak, no added salt Parsley potato balls Potato, 1 small Chopped parsley, 1 tea- spoon Butter, unsalted, 1 tea- spoon String beans, 1 serving Bread, salt-free, 1 slice Butter, unsalted, 1 tea- spoon Baked banana, $\frac{1}{2}$ medium Lemon juice, 1 teaspoon Tea Milk, 2 teaspoons Sugar, 2 teaspoons
Night	Main dish Meat, fish or egg Vegetables, fresh, cooked without salt Bread, salt-free Butter, unsalted, or oil Dessert Fruit, fresh Beverage	Baked macaroni and tomato Macaroni, $\frac{1}{2}$ cup Tomato, 1 chopped Milk, $\frac{1}{4}$ cup Butter, unsalted, 1 tea- spoon String beans, 1 serving Hearts of lettuce, 3 leaves Vinegar Bread, salt-free, 1 slice Butter, unsalted, 1 teaspoon Baked apple Apple, 1 small Sugar, 2 teaspoons Cream, 2 tablespoons Tea or coffee Milk, $\frac{1}{4}$ cup	Creamed chicken and mush- rooms in macaroni ring, 1 small serving Macaroni, $\frac{1}{2}$ cup Chicken, diced, $\frac{1}{8}$ cup Milk, $\frac{1}{4}$ cup Flour, $\frac{1}{4}$ tablespoon Butter, unsalted, 1 tea- spoon Peas, 1 serving Butter, unsalted, 1 tea- spoon Stuffed tomato salad Tomato, 1 medium Lettuce, 3 leaves Celery, 2 tablespoons Bread, salt-free, 1 slice Butter, unsalted, 1 teaspoon Apple rings Apple, 1 small Sugar, 2 teaspoons Cream, 2 tablespoons Tea or coffee Milk, $\frac{1}{4}$ cup

CARDIOVASCULAR DISEASE
(Without Congestive Heart Failure)
TYPICAL DIET
(ADULT)
Average Body Weight, 70 Kgm.

[illegible]

CARDIOVASCULAR DISEASE
(Without Congestive Heart Failure)

TYPICAL DIET
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Fruit Cereal Milk Cream Sugar Egg (bacon if desired) Bread or toast, white, enriched Butter Beverage Cream Sugar	Orange, 1 small Rolled oats, 1 sauce dish Milk, $\frac{1}{2}$ cup Sugar, 1 teaspoon Egg, soft cooked, 1 Toast, white, enriched, 2 slices Butter, 1 teaspoon Coffee Cream, 2 tablespoons Sugar, 2 teaspoons	Shredded wheat, 1 biscuit Strawberries, 10 Cream, 2 tablespoons Egg, poached, 1 Muffins, 2 small Butter, $\frac{1}{2}$ teaspoon Coffee Cream, 2 tablespoons Sugar, 2 teaspoons
Noon	Main dish Cereal or potato Cheese, egg, or milk Vegetables, cooked or in salad Bread, whole wheat Butter Dessert Fruit or gelatin Beverage	Macaroni and cheese Macaroni, $\frac{3}{4}$ cup Cheese, 2 tablespoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Tomato and lettuce salad Tomato, 1 Lettuce, 3 leaves Mayonnaise, 2 teaspoons Bread, whole wheat, 1 slice Butter, $\frac{1}{2}$ teaspoon Baked apple with milk Apple, 1 medium Sugar, 2 teaspoons Milk, 2 tablespoons Milk, 1 glass	Creamed chicken and mush- rooms in macaroni ring Macaroni, $\frac{3}{4}$ cup Chicken, diced, $\frac{1}{2}$ cup Mushrooms, diced, 2 table- spoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, $\frac{1}{2}$ teaspoon Stuffed tomato salad Tomato, 1 Lettuce, 3 leaves Celery, chopped, 2 table- spoons French dressing, 1 table- spoon Roll, 1 Butter, $\frac{1}{2}$ teaspoon Apple snow Apple, 2 tablespoons Egg white, $\frac{1}{2}$ Sugar, 2 teaspoons Milk, 1 glass
Night	Meat, fish or poultry Potato or cereal Vegetables, cooked or in salad Bread, whole wheat Butter Dessert Fruit or gelatin Beverage	Pot roast Baked potato, 1 small Butter, $\frac{1}{2}$ teaspoon String beans, 1 sauce dish Carrots, 1 sauce dish Bread, whole wheat, 1 slice Butter, 1 teaspoon Fruit gelatin with milk Banana, 1 medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 2 teaspoons Milk, 2 tablespoons Coffee Cream, 2 tablespoons Sugar, 2 teaspoons	Sirloin steak Parsley potato balls Potato, 1 small Parsley, chopped, 1 teas- poon Butter, $\frac{1}{2}$ teaspoon Carrots, glazed Carrots, 1 sauce dish Sugar, 1 teaspoon Butter, $\frac{1}{2}$ teaspoon Hearts of escarole Roquefort cheese dressing, 1 tablespoon Roll, 1 Butter, $\frac{1}{2}$ teaspoon Milk fruit sherbet, 6 heaping tablespoons Fruit juice, 4 tablespoons Sugar, 2 teaspoons Milk, $\frac{1}{2}$ cup Coffee Cream, 2 tablespoons Sugar, 2 teaspoons

NEPHRITIS

TYPICAL DIET

(LOW PROTEIN)

Average Body Weight, 70 Kgm.

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-hohy- drate	Pro- tein	Fat	Cal- cium	Phos- pho- rus	Iron	Vita- min A	Thia- mine	Ribo- flavin	Nia- cin	Ascor- bic Acid	Vita- min D
Milk	$\frac{1}{2}$ c.	120	6.0	4.2	4.7	0.142	0.112		192	48	204	0.12	1	3
Cheese														
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45
Meat, fish, or poultry														
Beef	2 oz.	60		11.0	10.8	0.006	0.118	1.6		66	84	2.94		
Cream, heavy	1 c.	240	8.0	4.8	84.8	0.176	0.128	0.2	3968	64	320	0.32		64
Butter	6 t.	30			24.0	0.006	0.006		990		2	0.02		
Mayonnaise	3 t.	15	0.5		11.0	0.002	0.005	0.1	29	6	6			3
Fruit														
10 per cent—orange	2 sm.	200	22.4	2.0	0.4	0.066	0.046	0.8	380	160	60	0.40	98	
15 per cent—apple	1 L.	200	30.0	0.6	0.8	0.012	0.020	0.6	180	80	40	0.40	10	
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.028	0.6	430	90	60	0.60	10	
Dried fruit—prunes	3 m.	30	21.3	0.7	0.2	0.016	0.026	1.2	567	30	48	0.51		
Vegetables														
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23	
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7	
10 per cent—string beans	1 s. d.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60	19	
10 per cent—carrots	1 s. d.	100	9.3	1.2	0.3	0.039	0.037	0.8	12,000	70	60	0.50	6	
Potato	1 L.	200	38.2	4.0	0.2	0.022	0.112	1.4	40	220	80	2.40	34	
Bread, white, enriched	3 sl.	90	48.0	7.5	1.8	0.051	0.090	1.8		216	126	1.98		
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.28		
Crackers														
Cereals														
Rolled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33		
Macaroni, cooked	$\frac{1}{2}$ c.	150	22.0	4.0	0.4	0.007	0.043	0.4		39	24	0.63		
Sugar	9 t.	45	45.0						6	6	12	0.09		
Jelly	3 T.	60	39.0	0.1		0.009	0.006	0.2						
Desserts														
Beverages														
Bouillon														
Totals of the Food Constituents			351.2	57.4*	148.1	0.701*	1.098*	14.6	21,622	1554	1519*	12.84*	208	115
Total Calories 2967														

* Below the normal.

NEPHRITIS
TYPICAL DIET
(LOW PROTEIN)
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Fruit Cereal Cream, heavy Sugar Bread, white, enriched Butter Jelly Beverage Cream Sugar	Orange juice, 2 oranges Prunes, 3 medium Sugar, 1 teaspoon Rolled oats, 1 sauce dish Cream, heavy, 6 table- spoons Sugar, 2 teaspoons Bread, white, enriched, 1 slice Butter, 1 teaspoon Jelly, 2 heaping table- spoons Coffee Cream, heavy, 2 table- spoons Sugar, 2 teaspoons	Orange juice, 2 oranges Apricots, cooked, 6 halves Sugar, 1 teaspoon Shredded wheat, 1 biscuit Cream, heavy, 6 table- spoons Sugar, 2 teaspoons Muffin, 1 Butter, 1 teaspoon Jelly, 1 heaping table- spoon Coffee Cream, heavy, 2 table- spoons Sugar, 2 teaspoons
Noon	Cereal or potato Cheese, egg, or meat if none is used in eve- ning meal Vegetables, cooked or in salad Bread, white, enriched Butter Fruit	Creamed macaroni Macaroni, $\frac{3}{4}$ cup Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Tomato, egg and lettuce salad Tomato, 1 medium Lettuce, 3 leaves Egg, hard cooked, 1 Mayonnaise, 1 tablespoon Bread, white, enriched, 1 slice Butter, 1 teaspoon Baked apple with cream Apple, 1 large Sugar, 3 teaspoons Cream, 4 tablespoons	Egg in fluffy potato nest Egg yolk, 1 Egg white, beaten, 1 Potato, 1 large (com- bined with egg white) Butter, 1 teaspoon Stuffed tomato salad Tomato, 1 medium Lettuce, 3 leaves Celery, chopped, 2 table- spoons Mayonnaise, 2 teaspoons Roll, 1 Butter, 1 teaspoon Apple porcupine with whipped cream Apple, 1 large Sugar, 3 teaspoons Jelly or marmalade, 1 tablespoon Nuts, 4 halves, almonds Cream, 4 tablespoons
Night	Meat, fish, or poultry 1 very small serving, if not used at noon Potato or cereal Vegetables, cooked or in salad Bread, white, enriched Butter Fruit	Hamburger Baked potato, 1 large Butter, 1 teaspoon String beans, buttered, 1 sauce dish Carrots, 1 sauce dish Butter, 1 teaspoon Bread, white, enriched, 1 slice Butter, 1 teaspoon Banana and cream Banana, 1 medium Cream, heavy, 4 table- spoons Sugar, 1 teaspoon	Creamed chicken and mush- rooms in macaroni ring Macaroni, $\frac{3}{4}$ cup Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Chicken, diced, $\frac{1}{4}$ cup, seant Mushrooms, diced, 2 table- spoons Carrots, 1 sauce dish Butter, 1 teaspoon Hearts of esearole French dressing, 1 tea- spoon Roll, 1 Butter, 1 teaspoon Banana and cream Banana, 1 medium Cream, heavy, 4 table- spoons Sugar, 1 teaspoon

NEPHRITIS

TYPICAL DIET

(NEPHROTIC TYPE)

Average Body Weight, 70 Kgm.

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy-drate	Pro-te-in	Fat	Cal-cium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Nia-cin	Ascor-bic Acid	Vita-min D
Milk	2 c.	480	24.0	16.8	18.8	0.566	0.446	0.3	768	192	816	0.48	4	10
Cheese, cottage	4 T.	60	2.6	11.6	0.4	0.050	0.158	0.4	18	12	174	0.06		
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45
Meat, fish, or poultry														
Beef, lean	8 oz.	240		44.8	33.6	0.024	0.488	6.4		288	360	12.24		
Cream														
Butter	2 t.	10			8.0	0.002	0.002		330					
Mayonnaise														
Fruit														
10 per cent—orange	2 sm.	200	22.4	2.0	0.4	0.066	0.046	0.8	380	160	60	0.40	98	
15 per cent—apple	1 L.	200	30.0	0.6	0.8	0.012	0.020	0.6	180	80	40	0.40	10	
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.028	0.6	430	90	60	0.60	10	
Dried fruit—prunes	3 m.	30	21.3	0.7	0.2	0.016	0.026	1.2	567	30	48	0.51		
Vegetables														
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23	
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7	
10 per cent—string beans	1 s. d.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60	19	
10 per cent—carrots	1 s. d.	100	9.3	1.2	0.3	0.039	0.037	0.8	12,000	70	60	0.50	6	
Potato	1 L.	200	38.2	4.0	0.2	0.022	0.112	1.4	40	220	80	2.40	34	
Bread, white, enriched	3 sl.	90	48.0	7.5	1.8	0.051	0.090	1.8		216	126	1.98		
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.28		
Crackers														
Cereals														
Rolled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33		
Macaroni, cooked	$\frac{1}{4}$ c.	150	22.0	4.0	0.4	0.007	0.043	0.4		39	24	0.63		
Sugar	9 t.	45	45.0											
Jelly	3 T.	60	39.0	0.1		0.009	0.006	0.2	6	6	12	0.09		
Desserts														
Cake, angel	$3\frac{1}{2}$ " arc		43.4	4.7	0.1	0.005	0.018	0.2		9	94	0.14		
Gelatin	$\frac{1}{4}$ T.	3		1.7										
Beverages														
Bouillon														
Totals of the Food Constituents			406.7	116.9	73.7	1.016	1.841	19.9	17,559	1871	2347	22.36	211	55

Total Calories 2758

NEPHRITIS
TYPICAL DIET
(NEPHROTIC TYPE)
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morning	<p>Fruit</p> <p>Cereal Milk Sugar</p> <p>Egg</p> <p>Bread, white, enriched Butter</p> <p>Beverage Milk Sugar</p>	<p>Orange, 1 small Prunes, 3 medium Sugar, 1 teaspoon</p> <p>Rolled oats, 1 sauce dish Milk, $\frac{1}{2}$ cup Sugar, 1 teaspoon</p> <p>Egg, soft cooked, 1 Toast, white, enriched, 1 slice Butter, 1 teaspoon</p> <p>Coffee Milk, 2 tablespoons Sugar, 2 teaspoons</p>	<p>Orange juice, 1 orange, small Apricots, cooked, 6 halves Sugar, 1 teaspoon</p> <p>Shredded wheat, 1 biscuit Milk, $\frac{1}{2}$ cup Sugar, 1 teaspoon</p> <p>Egg, poached, 1 Muffin, 1 Butter, $\frac{1}{2}$ teaspoon</p> <p>Coffee Milk, 2 tablespoons Sugar, 2 teaspoons</p>
Noon	<p>Meat, fish, or poultry</p> <p>Cereal or potato</p> <p>Vegetables, cooked or in salad</p> <p>Bread, white, enriched Butter</p> <p>Fruit</p>	<p>Cold meat</p> <p>Macaroni and tomatoes Macaroni, $\frac{3}{4}$ cup Tomato, $\frac{1}{2}$ cup Flour, 1 tablespoon</p> <p>Cottage cheese salad Cottage cheese, 4 table- spoons Jelly, 1 tablespoon Lettuce, 3 leaves</p> <p>Bread, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon</p> <p>Baked apple Apple, 1 large Sugar, 3 teaspoons Jelly, 1 heaping tablespoon Milk, 1 small glass</p>	<p>Cold sliced chicken</p> <p>Macaroni in tomato sauce Macaroni, $\frac{3}{4}$ cup Tomato, $\frac{1}{2}$ cup Flour, 1 tablespoon</p> <p>Cottage cheese salad Cottage cheese, 4 table- spoons Jelly, 1 tablespoon Lettuce, 3 leaves</p> <p>Roll, 1 Butter, $\frac{1}{2}$ teaspoon</p> <p>Apple surprise Apple, 1 large Sugar, 3 teaspoons Marmalade, 1 tablespoon Milk, 1 glass</p>
Night	<p>Meat, fish, or poultry</p> <p>Potato or cereal</p> <p>Vegetables, cooked or in salad</p> <p>Bread, white, enriched Butter</p> <p>Dessert Fruit gelatin or cake without fat</p>	<p>Hamburger</p> <p>Baked potato, 1 large</p> <p>String beans Carrots, steamed or raw</p> <p>Bread, white, enriched, 1 slice Butter, $\frac{1}{2}$ teaspoon</p> <p>Fruit gelatin Orange juice, 1 orange Banana, 1 medium Sugar, 2 teaspoons Gelatin, $\frac{1}{4}$ tablespoon</p> <p>Cake, angel, 1 piece Milk, 1 small glass</p>	<p>Sirloin steak</p> <p>Parsley potato balls Potato, 1 large Butter, $\frac{1}{2}$ teaspoon Parsley, chopped, 1 tea- spoon</p> <p>Hearts of escarole Carrots, steamed or raw</p> <p>Roll, whole grain, 1 Butter, $\frac{1}{2}$ teaspoon</p> <p>Fruit gelatin Orange juice, 1 orange Banana, 1 medium Sugar, 2 teaspoons Gelatin, $\frac{1}{4}$ tablespoon</p> <p>Cake, angel, 1 piece Milk, 1 small glass</p>

PREGNANCY
TYPICAL DIET
Average Body Weight, 56 Kgm.

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy-drate	Pro-tein	Fat	Cal-cium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Nia-cin	Ascor-bic Acid	Vita-min D
Milk	4 c.	960	48.0	34.0	38.0	1.132	0.892	0.7	1536	384	1632	0.96	8	20
Cheese	2 T.	30	0.5	7.0	9.7	0.262	0.183	0.2	522	12	150	0.06		
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45
Meat, fish, or poultry														
Beef	4 oz.	120		22.0	21.6	0.012	0.236	3.2		132	168	5.88		
Cream														
Butter	6 t.	30			24.0	0.006	0.006		990		2	0.02		
Mayonnaise														
Fruit														
10 per cent—orange	1 sm.	100	11.2	1.0	0.2	0.033	0.023	0.4	190	80	30	0.20	49	
15 per cent—apple	1 m.	150	22.5	0.5	0.6	0.009	0.015	0.5	135	60	30	0.30	8	
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.028	0.6	430	90	60	0.60	10	
Vegetables														
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23	
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7	
10 per cent—string beans	1 s. d.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60	19	
10 per cent—carrots	1 s. d.	100	9.3	1.2	0.3	0.039	0.037	0.8	12,000	70	60	0.50	6	
Potato	1 L.	200	38.2	4.0	0.2	0.022	0.112	1.4	40	220	80	2.40	34	
Bread, white, enriched	1 sl.	30	16.0	2.5	0.6	0.017	0.030	0.6		72	42	0.66		
whole wheat	2 sl.	60	28.8	5.8	2.2	0.036	0.240	1.6		168	90	1.96		
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.28		
Crackers														
Cereals														
Rolled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33		
Macaroni, cooked	$\frac{1}{2}$ c.	150	22.0	4.0	0.4	0.007	0.043	0.4		39	24	0.63		
Sugar	6 t.	30	30.0											
Jelly														
Desserts														
Cake, plain	3" sq.		42.7	3.3	7.0	0.032	0.053	0.4	315	31	60	0.22		
Gelatin	$\frac{1}{4}$ T	3		1.7										
Beverages														
Bouillon	$\frac{1}{2}$ can	156	4.7	8.1										
Totals of the Food Constituents			335.4	112.3	113.5	1.754	2.219	15.4	18,998	1817	2821	16.32	164	65*

* Below the normal.

PREGNANCY
TYPICAL DIET
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morning	Fruit Cereal Milk Sugar Egg Bread, white, enriched Butter Beverage Milk Sugar	Orange, 1 small Rolled oats, 1 sauce dish Milk, $\frac{1}{2}$ cup Sugar, 2 teaspoons Egg, soft cooked, 1 Toast, white, enriched, 1 slice Butter, 1 teaspoon Coffee Milk, $\frac{1}{2}$ cup Sugar, 1 teaspoon	Orange juice, 1 orange, small Shredded wheat, 1 biscuit Milk, 1 cup Sugar, 2 teaspoons Egg, 1 poached Toast, white, enriched, 1 slice Butter, 1 teaspoon Coffee Milk, $\frac{1}{2}$ cup Sugar, 1 teaspoon
Noon	Main dish Cereal or potato Cheese, egg, or milk Vegetables, cooked or in salad Bread, whole wheat Butter Dessert Fruit, pudding, or cake	Macaroni and cheese Macaroni, $\frac{3}{4}$ cup Cheese, grated, 4 table- spoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Tomato salad Tomato, 1 medium Lettuce, 3 leaves Bread, whole wheat, 1 slice Butter, 1 teaspoon Baked apple, 1 medium Sugar, 1 teaspoon Milk, $\frac{1}{2}$ cup Milk, 1 glass	Creamed chicken and mush- rooms in macaroni ring Macaroni, $\frac{3}{4}$ cup Chicken, diced, $\frac{1}{2}$ cup Mushrooms, diced, 2 table- spoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Stuffed tomato salad Tomato, 1 medium Lettuce, 3 leaves Celery, 2 tablespoons Roll, 1 Butter, 1 teaspoon Apple snow Apple, 2 tablespoons Egg white, $\frac{1}{2}$ Sugar, 1 teaspoon Milk, 1 glass
Night	Soup Crackers Meat, fish, or poultry, lean Potato or cereal Vegetables, cooked or in salad Bread, whole wheat Butter Dessert Fruit, cake, pudding, pastry, or gelatin	Bouillon Pot Roast Baked potato, 1 large Butter, 1 teaspoon String beans, buttered Carrots, buttered Butter for vegetables, 1 teaspoon Bread, whole wheat, 1 slice Butter, 1 teaspoon Fruit gelatin Banana, 1 medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 2 teaspoons Cake, 1 piece, plain	Consomme Sirloin steak Parsley potato balls Potato, 1 large Parsley, chopped, 1 tea- spoon Butter, 1 teaspoon Carrots, buttered Butter, 1 teaspoon Hearts of escarole Roquefort cheese dressing, 1 tablespoon Roll, 1 Butter, 1 teaspoon Orange ice, 2 heaping table- spoons Fruit juice, 2 tablespoons Sugar, 2 teaspoons Cup cake, 1, plain
Between night meal and bed- time	Milk, 1 glass	Milk, 1 glass	Milk, 1 glass

PREGNANCY
TYPICAL DIET
(LOW CALORIC)
Average Body Weight, 56 Kgm.

Foods	Amounts		Grams						Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy- drate	Pro- tein	Fat	Cal- cium	Phos- pho- rus	Iron	Vita- min A	Thia- mine	Ribo- flavin	Nia- cin	Ascor- bic Acid	Vita- min D	
Milk, skim	4 c.	960	48.8	33.6	0.8	1.132	0.892	0.7			384	1728	0.96	8	45
Cheese	2 T	30	0.5	7.0	9.7	0.262	0.183	0.2	522	12	150	0.06			
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05			
Meat, fish, or poultry															
Beef	4 oz.	120		22.0	21.6	0.012	0.236	3.2		132	168	5.88			
Cream															
Butter	6 t.	30			24.0	0.006	0.006		990		2	0.02			
Mayonnaise															
Fruit															
10 per cent—orange	1 sm.	100	11.2	1.0	0.2	0.033	0.023	0.4	190	80	30	0.20	49		
15 per cent—apple	1 sm.	100	15.0	0.3	0.4	0.006	0.010	0.3	90	40	20	0.20	5		
20 per cent—banana	$\frac{1}{2}$ m.	50	11.5	0.6	0.1	0.004	0.014	0.3	215	45	30	0.30	5		
Vegetables															
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23		
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7		
5 per cent—cabbage, cooked	$\frac{1}{2}$ c.	100	5.3	1.4	0.2	0.046	0.031	0.5	80	70	60	0.30	52		
10 per cent—string beans	1 s. d.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60	19		
10 per cent—carrots	1 s. d.	100	9.3	1.2	0.3	0.039	0.037	0.8	12,000	70	60	0.50	6		
Potato															
Bread, white, enriched	3 sl.	90	48.0	7.5	1.8	0.051	0.090	1.8		216	126	1.98			
Flour															
Crackers															
Cereals															
Rolled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33			
Sugar															
Jelly															
Desserts															
Gelatin	$\frac{1}{2}$ T.	3		1.7											
Beverages															
Totals of the Food Constituents			182.1*	91.4	67.5*	1.729	1.836	12.8*	16,927	1473*	2746	12.05*	174		45*

* Below the normal.

PREGNANCY
TYPICAL DIET
(LOW CALORIC)
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morning	Fruit Cereal Milk, skim No sugar Egg Bread, white, enriched Butter Beverage Milk No sugar	Orange, 1 small Rolled oats, 1 sauce dish Milk, skim, $\frac{1}{2}$ cup Egg, soft cooked, 1 Bread, white, enriched, 1 slice Butter, 2 teaspoons Coffee Milk, skim, 4 tablespoons	Orange juice, 1 orange, small Shredded wheat, 1 biscuit Milk, skim, $\frac{1}{2}$ cup Egg, poached, 1, on Toast, white, enriched, 1 slice Butter, 2 teaspoons Coffee Milk, skim, 4 tablespoons
Noon	Cheese, egg, or milk Vegetables, cooked or in salad Vinegar Bread, white, enriched Butter Fruit No sugar Milk, skim	Cheese, American, 1 serving Cabbage, buttered Butter, 1 teaspoon Tomato and lettuce salad Tomato, 1 medium Lettuce, 3 leaves Vinegar Bread, white, enriched, 1 slice Butter, 1 teaspoon Baked apple Apple, 1 small No sugar Milk, skim, $1\frac{1}{2}$ glasses	Steamed cabbage with cheese Cabbage, 5 rounded table- spoons Cheese, grated, 4 table- spoons Butter, 1 teaspoon Stuffed tomato salad Tomato, 1 medium Lettuce, 3 leaves Celery, chopped, 2 table- spoons Vinegar Roll, 1 Butter, 1 teaspoon Apple rings Apple, 1 small No sugar Milk, skim, $1\frac{1}{2}$ glasses
Night	Meat, fish, or poultry, lean Vegetables, cooked or in salad Bread, white, enriched Butter Fruit or gelatin dessert No sugar Milk, skim	Pot Roast String beans, buttered Carrots, buttered Butter, 1 teaspoon Bread, white, enriched, 1 slice Butter, 1 teaspoon Fruit gelatin Banana, $\frac{1}{2}$ medium Gelatin, $\frac{1}{2}$ tablespoon Saccharine Milk, skim, 1 glass	Sirloin steak Hearts of escarole Carrots, buttered Butter, 1 teaspoon Roll, 1 Butter, 1 teaspoon Molded fruit gelatin Banana, $\frac{1}{2}$ medium Gelatin, $\frac{1}{2}$ tablespoon Saccharine Milk, skim, 1 glass
Between night meal and bed-time	Milk, skim	Milk, skim, 1 glass	Milk, skim, 1 glass

LACTATION
TYPICAL DIET
Average Body Weight, 56 Kgm.

Foods	Amounts		Grams					Milli-grams	I.U.	Micrograms		Milligrams		I.U.
	Household Measure	Grams	Car-bohy-drate	Pro-tein	Fat	Cal-cium	Phos-pho-rus	Iron	Vita-min A	Thia-mine	Ribo-flavin	Nia-cin	Ascor-bic Acid	Vita-min D
Milk	6 c.	1440	72.0	50.8	56.8	1.698	1.338	1.0	2304	576	2448	1.44	12	30
Cheese	2 T.	30	0.5	7.0	9.7	0.262	0.183	0.2	522	12	150	0.06		
Egg	1	50	0.4	6.4	5.8	0.027	0.105	1.4	570	60	170	0.05		45
Meat, fish, or poultry														
Beef	4 oz.	120		22.0	21.6	0.012	0.236	3.2		132	168	5.88		
Butter	3 t.	15			12.0	0.003	0.003		495		1	0.01		
Fruit														
10 per cent—orange	2 sm.	200	22.4	2.0	0.4	0.066	0.046	0.8	380	160	60	0.40	98	
15 per cent—apple	1 m.	150	22.5	0.5	0.6	0.009	0.015	0.5	135	60	30	0.30	8	
20 per cent—banana	1 m.	100	23.0	1.2	0.2	0.008	0.028	0.6	430	90	60	0.60	10	
Vegetables														
5 per cent—tomato	1 m.	100	4.0	1.0	0.3	0.011	0.027	0.6	1100	60	40	0.60	23	
5 per cent—lettuce, green	3 lvs.	30	1.0	0.3	0.1	0.020	0.007	0.3	540	20	23	0.07	7	
10 per cent—string beans	1 s. d.	100	7.7	2.4	0.2	0.065	0.044	1.1	630	80	100	0.60	19	
10 per cent—carrots	1 s. d.	100	9.3	1.2	0.3	0.039	0.037	0.8	12,000	70	60	0.50	6	
Potato	1 L.	200	38.2	4.0	0.2	0.022	0.112	1.4	40	220	80	2.40	34	
Bread, white, enriched	1 sl.	30	16.0	2.5	0.6	0.017	0.030	0.6		72	42	0.66		
whole wheat	2 sl.	60	28.8	5.8	2.2	0.036	0.240	1.6		168	90	1.96		
Flour	1 T.	8	6.0	0.9	0.1	0.001	0.007	0.2		35	21	0.28		
Cereals														
Rolled oats, cooked	1 s. d.	180	19.4	5.0	2.0	0.015	0.131	1.2		204	39	0.33		
Macaroni, cooked	$\frac{3}{4}$ c.	150	22.0	4.0	0.4	0.007	0.043	0.4		39	24	0.63		
Sugar	6 t.	30	30.0											
Jelly	3 t	20	13.0			0.003	0.002	0.1	2	2	4	0.03		
Desserts														
Cake, plain	3'' sq.		42.7	3.3	7.0	0.032	0.053	0.4	315	31	60	0.22		
Gelatin	$\frac{1}{4}$ T.	3		1.7										
Beverages														
Bouillon														
Totals of the Food Constituents			388.9	122.0	120.5	2.353	2.687	16.4	19,463	2091	3670	17.02	217	75*

Total Calories 3128

* Below the normal.

LACTATION
TYPICAL DIET
Meals for the Day

	Meal Plan	Moderate Cost Menu	Liberal Cost Menu
Morn- ing	Fruit Cereal Milk Sugar Egg Bread, white, enriched Butter Beverage Milk Sugar	Oranges, 2 small Rolled oats, 1 sauce dish Milk, $\frac{1}{2}$ cup Sugar, 2 teaspoons Egg, soft cooked, 1 Toast, white, enriched, 1 slice Jelly, 1 teaspoon Butter, $\frac{1}{2}$ teaspoon Coffee Milk, $\frac{1}{2}$ cup Sugar, 1 teaspoon	Orange juice, 2 oranges, small Shredded wheat, 1 biscuit Milk, 1 cup Sugar, 2 teaspoons Egg, poached, 1 Toast, white, enriched, 1 slice Jelly, 1 teaspoon Coffee Milk, $\frac{1}{2}$ cup Sugar, 1 teaspoon
Mid- morn- ing	Milk	Milk, 1 glass	Milk, 1 glass
Noon	Main dish Cereal or potato Cheese, egg, or milk Vegetables, cooked or in salad Vinegar Bread, whole wheat Butter Dessert Fruit, pudding, or cake	Macaroni and cheese Macaroni, $\frac{3}{4}$ cup Cheese, grated, 4 table- spoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Tomato salad Tomato, 1 medium Lettuce, 3 leaves Vinegar Bread, whole wheat, 1 slice Jelly, 1 teaspoon Baked apple, 1 medium Sugar, 1 teaspoon Milk, $\frac{1}{2}$ cup Milk, 1 glass	Creamed chicken and mush- rooms in macaroni ring Macaroni, $\frac{3}{4}$ cup Chicken, diced, $\frac{1}{3}$ cup Mushrooms, diced, 2 table- spoons Milk, $\frac{1}{2}$ cup Flour, 1 tablespoon Butter, 1 teaspoon Stuffed tomato salad Tomato, 1 medium Lettuce, 3 leaves Cream cheese, 2 table- spoons Vinegar Roll, 1 Jelly, 1 teaspoon Apple snow Apple, 2 tablespoons Egg white, $\frac{1}{2}$ Sugar, 1 teaspoon Milk, 1 glass
Mid- after- noon	Milk	Milk, 1 glass	Milk, 1 glass
Night	Meat, fish, or poultry, lean Potato or cereal Vegetables, cooked or in salad Bread, whole wheat Butter Dessert Fruit, cake, pudding, pastry, or gelatin	Pot Roast Baked potato, 1 large Butter, $\frac{1}{2}$ teaspoon String beans, buttered Carrots, buttered Butter for vegetables, 1 teaspoon Bread, whole wheat, 1 slice Jelly, 1 teaspoon Fruit gelatin Banana, 1 medium Gelatin, $\frac{1}{4}$ tablespoon Sugar, 2 teaspoons Cake, 1 piece, plain	Sirloin steak Parsley potato balls Potato, 1 large Parsley, chopped, 1 tea- spoon Butter, 1 teaspoon Carrots, buttered Butter, 1 teaspoon Hearts of celery Roll, 1 Jelly, 1 teaspoon Orange ice, 2 heaping table- spoons Fruit juice, 2 tablespoons Sugar, 2 teaspoons Cup cake, 1, plain
Be- tween night meal and bed- time	Milk, 1 glass	Milk, 1 glass	Milk, 1 glass

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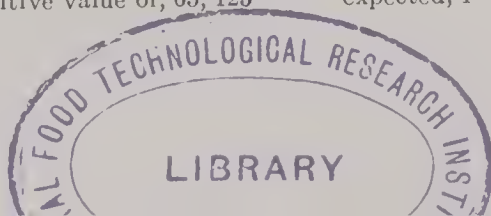
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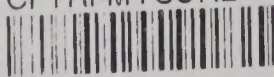
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